VOLUME LIV NUMBER THREE

THE NATIONAL GEOGRAPHIC MAGAZINE

SEPTEMBER, 1928

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ORGANIZED FOR "THE INCREASE AND DIFFUSION OF GEOGRAPHIC KNOWLEDGE"

TO carry out the purposes for which it was founded forty years ago the National Geographic Society publishes this Magazine. All receipts are invested in the Magazine itself or expended directly to promote geographic knowledge.

ARTICLES and photographs are desired. For material which the Magazine can use, generous remuneration is made. Contributions should be accompanied by an addressed return envelope and postage.

IMMEDIATELY after the terrific eruption of the world's largest crater, Mt. Katmai, in Alaska, a National Geographic Society expedition was sent to make observations of this remarkable phenomenon. Four expeditions have followed and the extraordinary scientific data resulting given to the world. In this vicinity an eighth wonder of the world was discovered and explored—"The Valley of Ten Thousand Smokes," a vast area of steaming, spouting fissures. As a result of The Society's discoveries this area has been created a National Monument by proclamation of the President of the United States.

AT an expense of over $50,000 The Society sent a notable series of expeditions into Peru to investigate the traces of the Inca race. Their discoveries form a large share of our knowledge of a civilization waning when Pizarro first set foot in Peru.

THE Society also had the honor of subscribing a substantial sum to the expedition of Admiral Peary, who discovered the North Pole.

NOT long ago The Society granted $25,000, and in addition $75,000 was given by individual members to the Government when the congressional appropriation for the purpose was insufficient, and the finest of the giant sequoia trees of California were thereby saved for the American people.

THE Society is conducting extensive explorations and excavations in northwestern New Mexico, which was one of the most densely populated areas in North America before Columbus came, a region where prehistoric peoples lived in vast communal dwellings and whose customs, ceremonies, and name have been engulfed in an oblivion.

TO further the important study of solar radiation in relation to long-range weather forecastings, The Society has appropriated $60,000 to enable the Smithsonian Institution to establish a station for four years on Mt. Brukkaros, in Southwest Africa.

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PAINTING BY ALFRED DEHODENCQ
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FATE DIRECTS THE FALTERING FOOTSTEPS OF COLUMBUS

Rebuffed on every hand, the weary dreamer, with his son, Diego, comes to the Convent of La Rábida. The sympathetic prior, Juan Pérez, formerly father confessor to Queen Isabella, intercedes for him at court, and Spain finally sponsors the great Voyage of Discovery.

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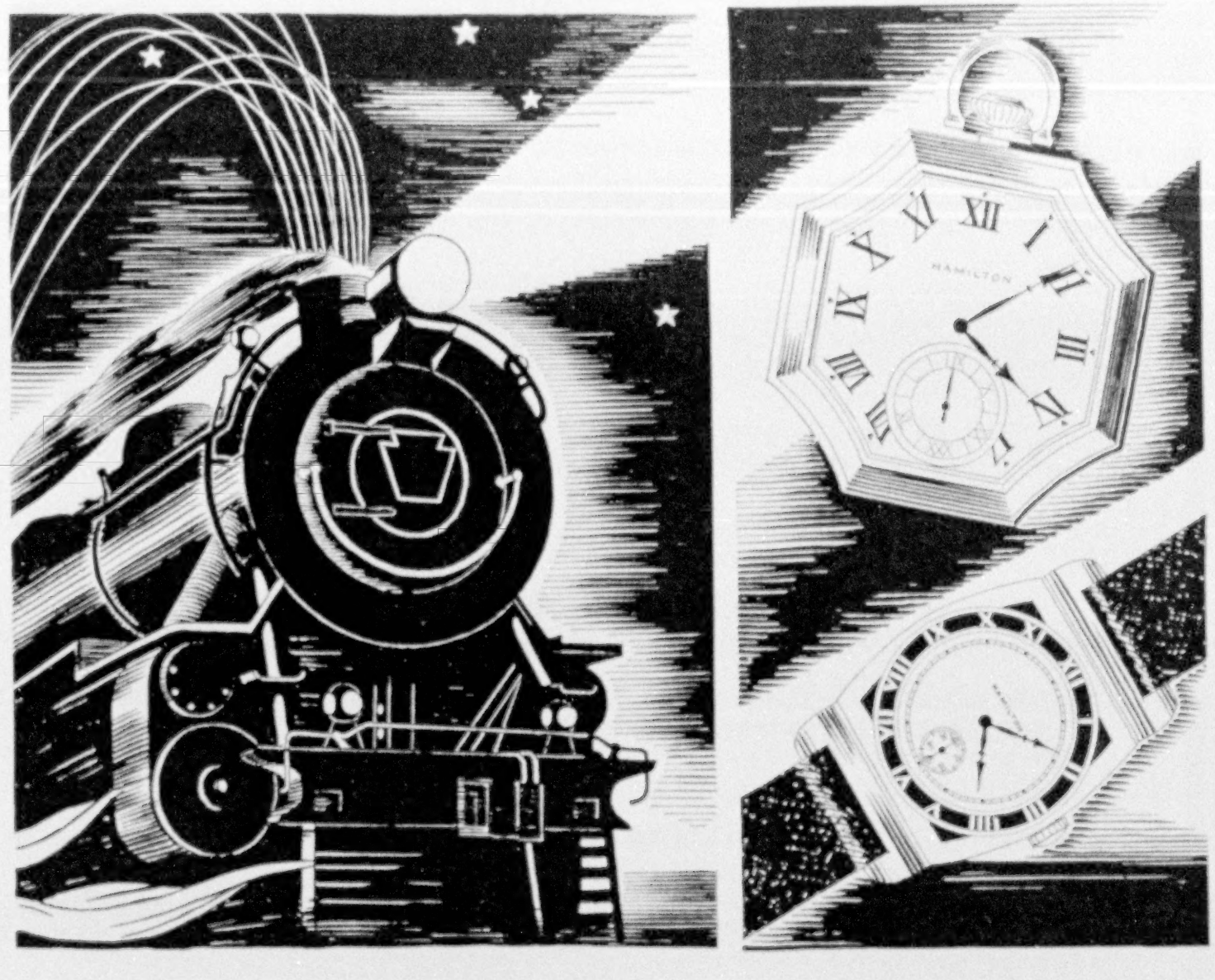
SUPPLEMENT, 1928
NATIONAL GEOGRAPHIC MAGAZINE



"The Beating Heart of Time..."

From "A Ride in the Cab of the Broadway Limited"

BY DUDLEY NICHOLS

DOWN the two dark ribbons of steel, amid a thundering world of glimmering signals, rides the great flyer of the rails. The grim pilot of the cab bows down to two gods of safety: the emerald green of the gleaming semaphore and his Hamilton Watch—the watch of railroad accuracy . . . How does it feel to be with the pilot of such a thundering, reeling demon of steel? Dudley Nichols, staff correspondent of the New York World, knows. He has ridden—and written a fast-moving story packed with power and excitement.

◆ ◆ ◆

Let us send you a copy of this thrilling account, illustrated with many unusual photographs. Also, our own interesting booklet, "The Timekeeper." Above is shown the ultra-modern "Piping Rock" strap watch, which may be had in white or green 14k gold at $125. Also the "Robert Morris" pocket model, in filled white or green gold at $55. Other Hamilton models, ranging from $48 to $685, on display at any fine jeweler's. Address Hamilton Watch Company, 882 Columbia Ave., Lancaster, Pa.

Hamilton

The **Watch** *of Railroad Accuracy*

No other cars in all the world like these

The New

CADILLACS + *The New* LaSALLES + + *The New* FLEETWOODS

THE MOST COMPLETE AND EXTENSIVE LINE EVER PRESENTED

You Must Drive These Cars to Appreciate Their New and Revolutionary Performance, Control, Security and Mind-Ease Features

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5 . . New Adjustable Front Seats—Easily adjusted to suit the comfort of any driver.

6 . . Pneumatic Control in Chassis and Body Engineering—Assuring maximum quietness. Bodies incorporating features of outstanding strength, roominess, comfort—and the last word in style.

7 . . New Modernity in Finish and Appointment—Deep, rich upholstery. New fittings. Deft and pleasing treatments in fabrics and trim.

8 . . Chromium Plating—The new metallurgical treatment that assures permanent lustre of exposed nickel parts.

FIFTY BODY TYPES AND STYLES BY FISHER AND FLEETWOOD

YOU CANNOT buy a car at home or abroad that will give as much delight as the newest Cadillacs, La Salles—and Fleetwoods on these chassis.

The Exclusive New Fleetwoods

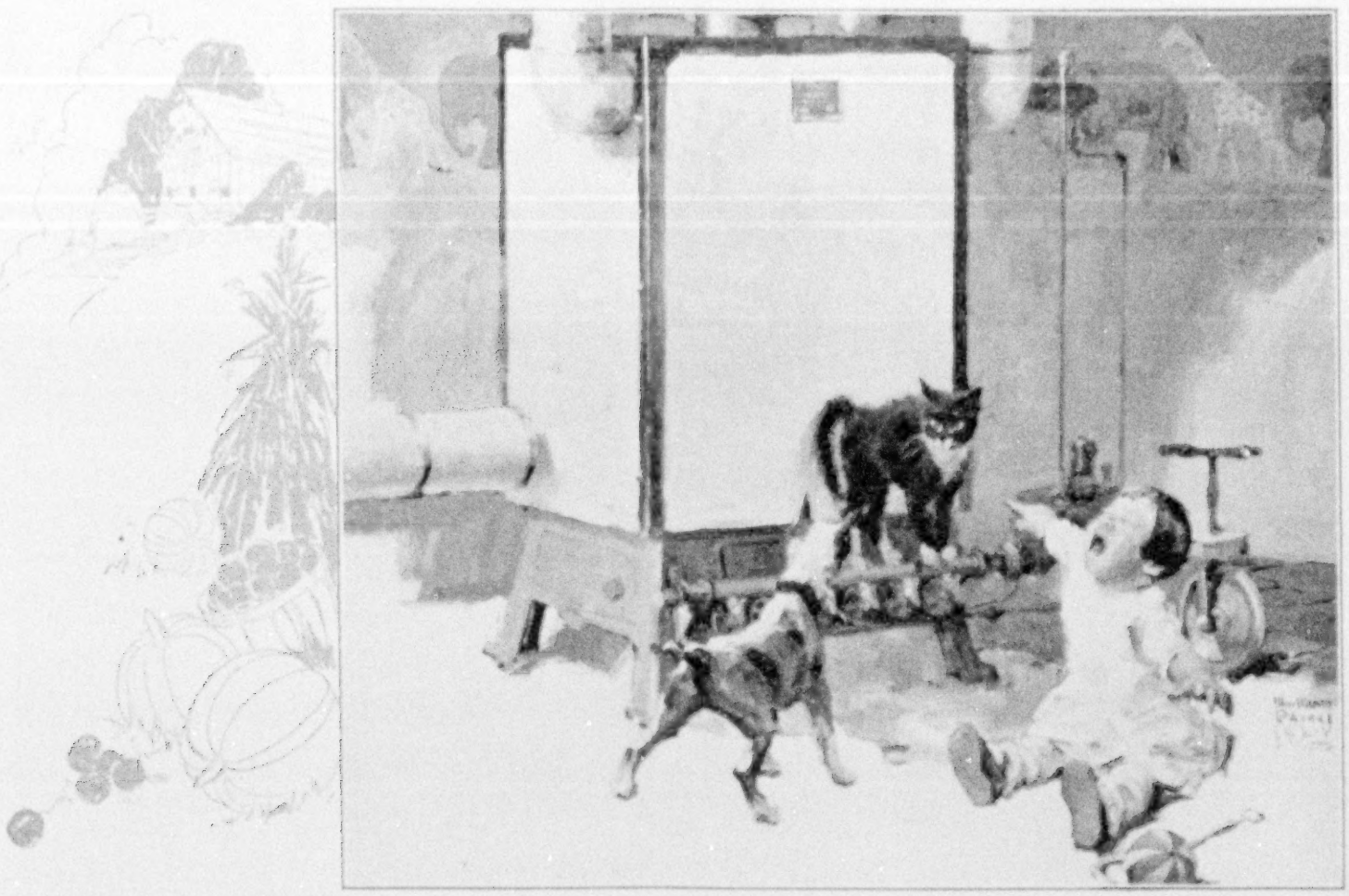
In addition to the splendid array of new Fisher Body types and styles there are 14 exclusive and exquisite custom models, Fleetwood designed and Fleetwood built—offering the widest and most extensive selection of fine cars ever made available.

The Cadillac Motor Car Company does not hesitate to state that there is nothing elsewhere even remotely approximating the character and calibre of these matchless new creations.

Never at any time in the history of the motor car has a given price in any class or grade purchased an equal degree of motoring luxury. To understand and appreciate fully just how great an advance the new Cadillacs and LaSalles represent it is necessary to drive them.

CADILLAC MOTOR CAR COMPANY

Detroit, Michigan *Division of General Motors Corporation* Oshawa, Canada



The Furnace *orders its own fuel*

where "the Pup is Furnace Man"

Where the pup is furnace man—as well as playmate—the basement enters a new era of usefulness. It can be quickly and easily transformed into a clean, livable part of the home—a cheerful playroom, a cozy den, an attractive room for entertaining, a spotlessly clean clothes drier or a workshop.

WITH Bryant Gas Heating there is no laying in of a winter's fuel supply—no keeping track of the amount on hand—no fear of running out of fuel in the midst of a cold spell—no mussy deliveries to deface lawns or walks—no space needed for bins or tanks. The fuel is delivered by *pipe* as needed and is paid for *after it has done its work.*

Busy men, and their wives, appreciate such freedom from time-consuming bother and inconvenience. But that is just the beginning of a Bryant's convenience. During the entire heating season it maintains a cozy, even warmth with no more effort than the winding of an eight-day clock—a pup can do the furnace tending.

To most people it is an agreeable surprise to find how very moderate the cost of this luxurious heating service really is. An expert gas heating engineer from the nearest of our 37 local offices will gladly see that you are supplied with a dependable estimate for *your* home. Just tell us—or tell your gas company—that you would like to know the cost of "letting the pup be the furnace man."

BRYANT GAS HEATING

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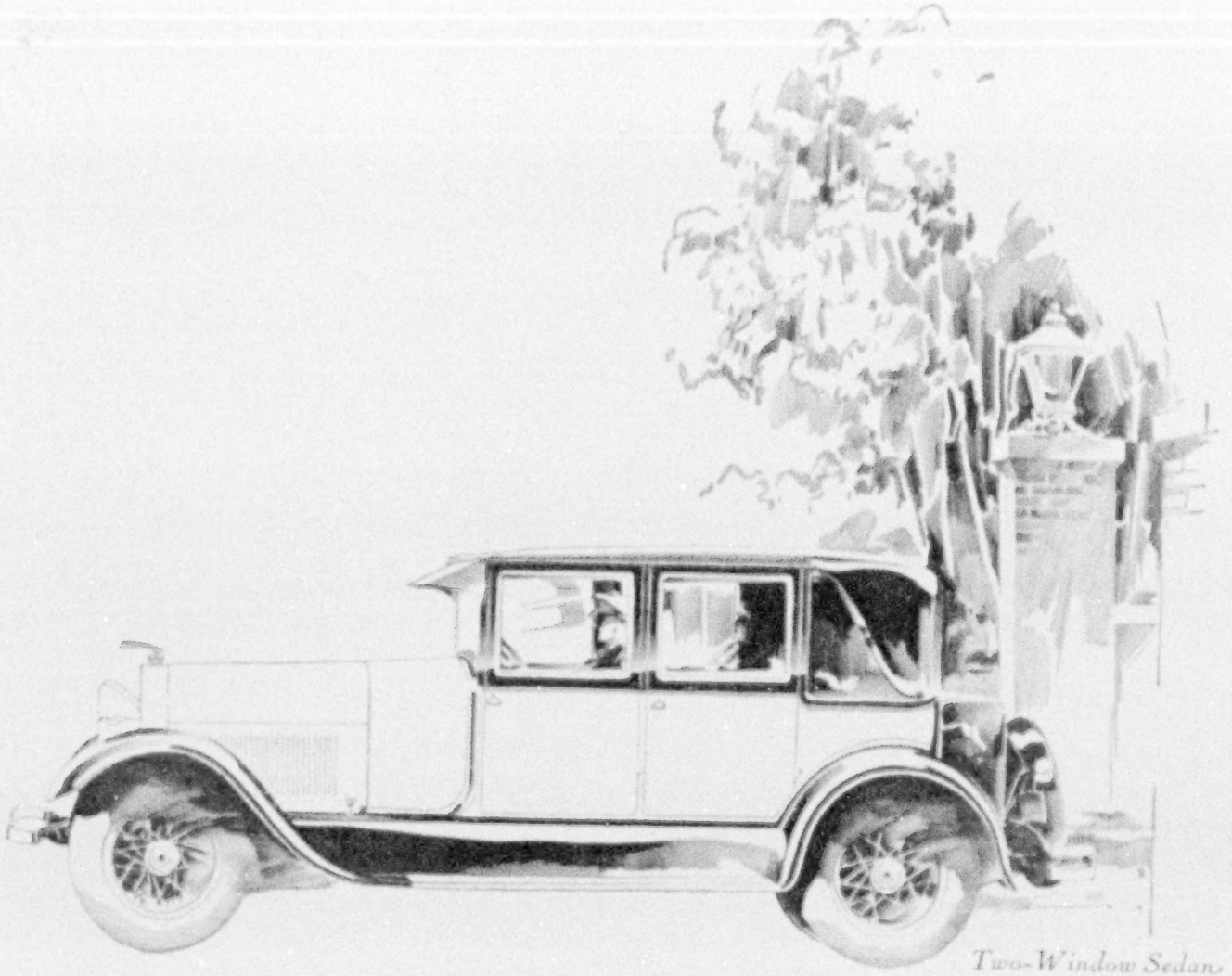
LINCOLN



Two-Window Sedan

Choosing from the world's quality markets

The men who design and build the Lincoln may choose the finest of materials from the quality markets of the world. They are in no way restricted in making the Lincoln "as fine a car as it is possible to produce." So they who have the finest in materials to offer come very soon to the doors of the Lincoln Motor Company.

Lincoln doors are never closed to those who have Quality to sell. Other things being equal, price is a factor—but when unequalled Quality is offered to Lincoln and the purchase of that Quality is necessary to Lincoln fineness, price ceases to be a factor—for back of Lincoln are all the resources of the Ford Motor Company.

Prices range from $4600 to $7300, completely equipped, at Detroit

LINCOLN MOTOR COMPANY

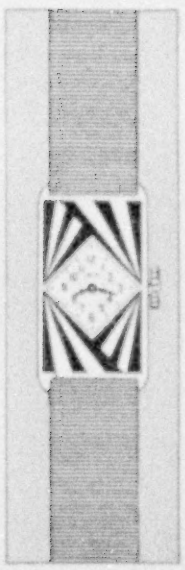
Division of Ford Motor Company

ELGIN PARISIENNE WATCHES

TIMELY . . . . AS ONLY PARIS COULD STYLE THEM

TIME-TRUE . . AS ONLY ELGIN COULD MAKE THEM

© ELGIN, 1923



MADAME AGNÈS

THE AGNÈS MODEL . . . Only such an artist . . . and personage . . . could have designed it. For Agnès lives as she creates . . . artistically. Her modern art home, her conversation, her chic, are famous . . . and famous, too, is the Elgin Parisienne she has designed. With jade, black, or ruby enamel. In a free, modern spirit, she has set a new note in watch design, and Elgin sets a new note in price $35

MADAME JENNY

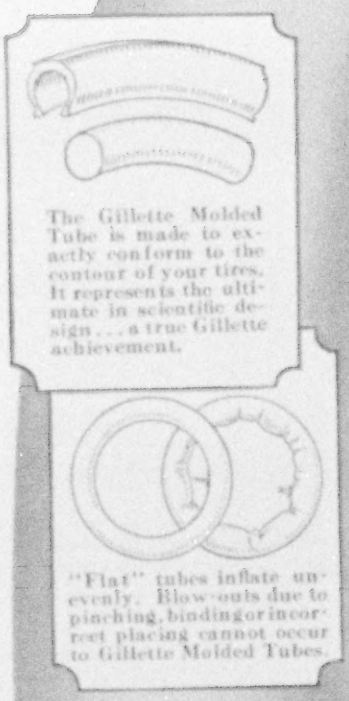
THE JENNY MODEL . . . Modernism need not depend alone on planes, and points and angles, chic as they are, declares Madame Jenny. This famed modiste and Chevalier of the Legion of Honor, has approached a watch case as she would approach a frock . . . and flowing, feminine curves attain a modern, modish flair. And Jenny meets the modern vogue for color with jade, black, or ruby enamel $35

THESE three famous French fashion authorities . . . heads of great dressmaking houses of the Rue de la Paix . . . have designed the ELGIN Parisienne watches which appear beside them . . . For ELGIN consulted Paris on designs, to give accurate ELGIN movements new and beautiful cases . . . These Parisienne watches are chic, gloriously smart, but above all . . . correct! In good taste! Free from the freakish! In style today, tomorrow, and years from tomorrow . . . Only $35, thanks to ELGIN efficiency. Slip a Parisienne upon your wrist . . . correct time and correct style shall be yours for long, long years to come . . . Two things say so . . . the Parisienne's basic, unchanging good taste and the ELGIN guarantee.

MADAME CHARLOTTE

THE PREMET MODEL . . . designed by Madame Charlotte, famous Directrice of the House of Premet. And exquisitely does the watch reflect the woman. Picture the charm of hair as white as white gold . . . and a youthful, fascinating face. And miraculous hands, artistic, competent . . . blend of doer and dreamer. The Premet model of the Elgin Parisienne is fashioned with jade, black, or ruby enamel $35

The Gillette Molded Tube



Another Triumph *of* Gillette Pioneering

COMPANION to the great Gillette Ambassador Tire is this Gillette Molded Tube. Only the processes and machinery pioneered and perfected by Gillette could have made it possible!

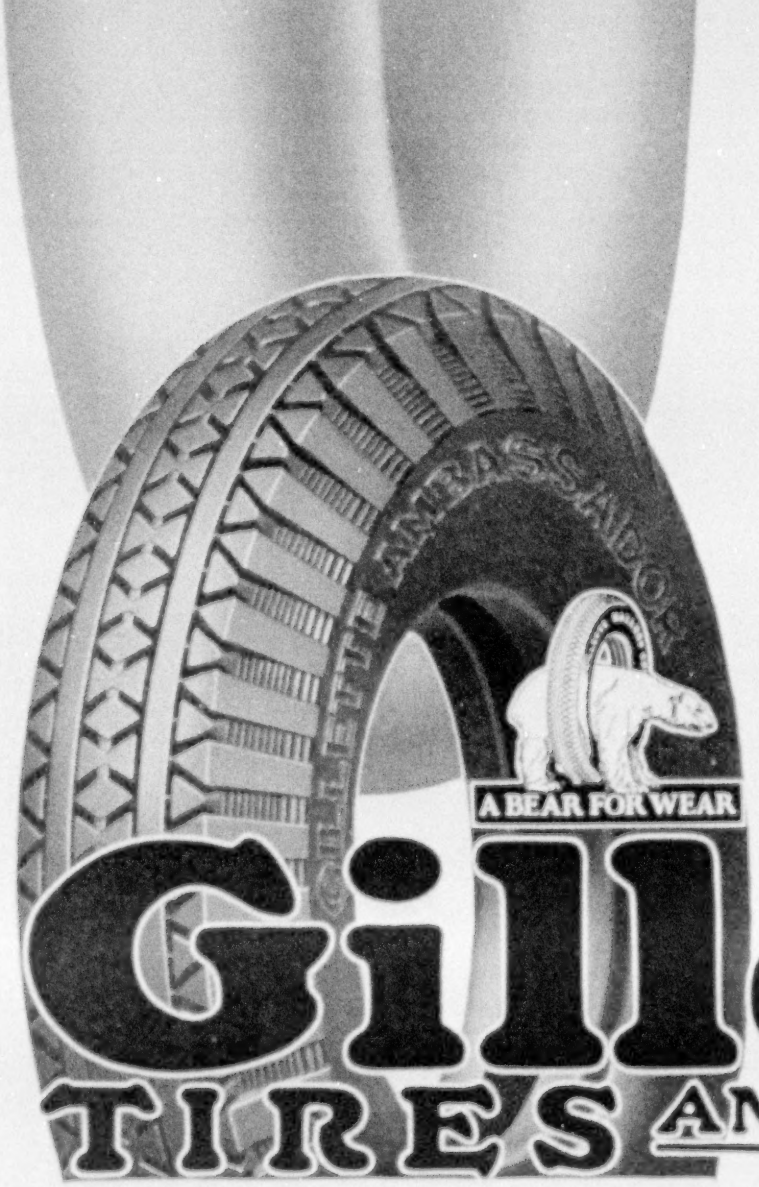
The finest rubber produced is used in the Gillette Molded Tube. A tube of natural cream color, so pure that it floats. A tube so resilient it is capable of stretching eight times its normal length. A tube built to give the longest and hardest service.

Molded to a perfect circle, it conforms to the tire—it flexes with every motion without heating or perceptible wear. When inflated it is free from kinks; it cannot pinch or bind inside the casing. *And it cannot be placed improperly.*

No other tube will give longer service; none will require less attention; none will give greater all 'round satisfaction.

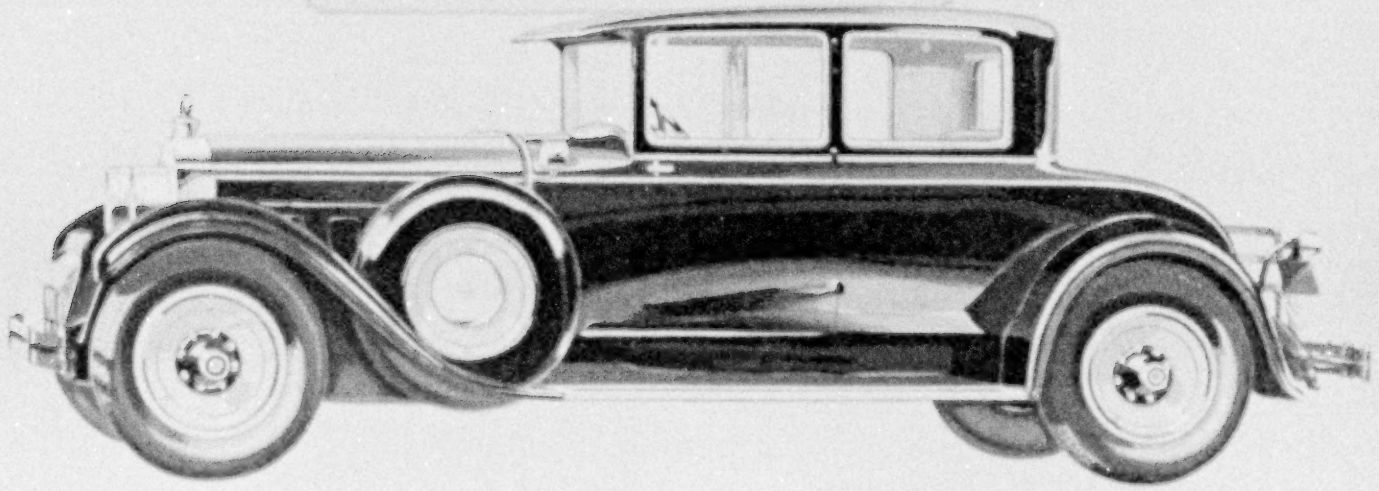
Ask for the Gillette Molded Tube by name. It pays to insist!

Gillette Rubber Company
Eau Claire Wisconsin



Gillette TIRES AND TUBES

To our great grandfathers the coach and four represented the height of luxury, speed and comfort in transportation



THE slender, graceful proportions of Packard bodies are not secured at any sacrifice of comfort to driver or passengers — exterior beauty is combined with interior roominess.

But the restful ease of Packard transportation is not the result of ample room and deep upholstery alone. Chassis design plays an important part in providing the degree of travel luxury which Packard owners know.

All that men have learned about spring design and body suspension in 200 years since the first crude steel springs supplanted leather straps on private coaches is summed up in Packard riding comfort today.

Packard engineers have contributed scores of hidden aids to the most luxurious personal transportation man has ever known. And not the least of these contributing causes of owner comfort and satisfaction is the peace of mind which comes with ease of control, silence, smooth riding, sure safety—and the gratifying knowledge of universal approval.

Packard cars are priced from $2275 to $4550. Individual custom models from $3875 to $8725, at Detroit

PACKARD

ASK THE MAN WHO OWNS ONE

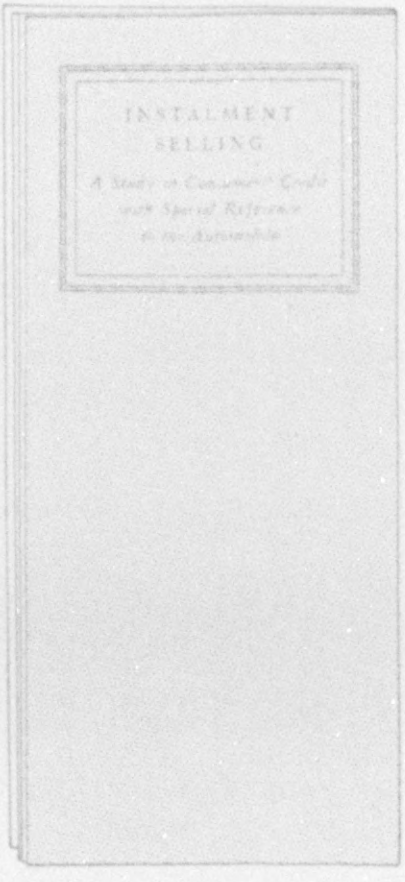
CONSUMERS' CREDIT

The part it plays in marketing merchandise

IN ADDITION to its annual Report and Quarterly Statement of Earnings, General Motors issues special booklets from time to time for the information of its stockholders, employees, dealers and the public generally. Many of the principles and policies outlined in these booklets apply to other businesses.

The subject of instalment selling is of special interest not only to bankers and business men but to everyone who has to do with the distribution and marketing of merchandise wherein consumers' credit plays a part.

General Motors has, therefore, issued a booklet entitled INSTALMENT SELLING—a study in consumers' credit with special reference to the automobile industry. This is a résumé of the research by Professor Edwin R. A. Seligman, McVickar Professor of Political Economy, Columbia University, which covered fifteen months' study and included every phase of business in which instalment selling is a factor. The whole report embraces two large volumes: this résumé gives the salient points.



A copy of this booklet entitled INSTALMENT SELLING, which has just been issued, together with the series of booklets issued by General Motors to its stockholders, will be mailed if a request is directed to Department M-5, General Motors Corporation, Broadway at 57th Street, New York City.

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"A car for every purse and purpose"

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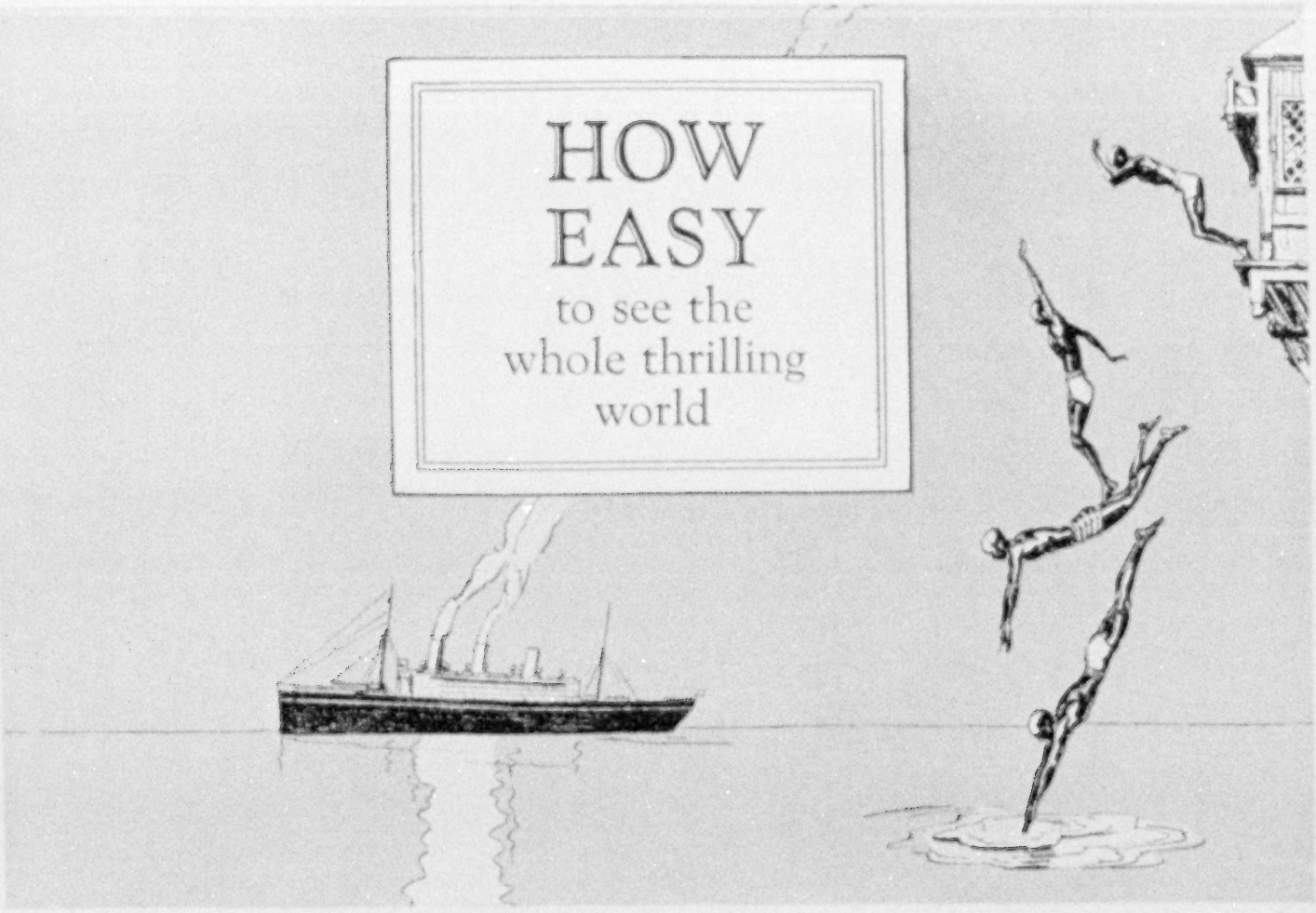
FRIGIDAIRE—The Automatic Refrigerator *DELCO-LIGHT Electric Plants*

1928-29 Cruises



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Home *from a happy week-end!*

AFTER a happy week-end—have a happy home-coming! Find a generous supply of food waiting for you. Milk, fruit, meat—your General Electric Refrigerator will keep them all perfectly chilled—healthfully fresh.

Your every-day planning of menus becomes so much simpler, too. Delicious desserts will be as easy to prepare as old, familiar standbys. Salads are crisper, fruits more luscious, when they are thoroughly chilled.

Quietly, economically, this "years ahead" refrigerator brings you new comfort. Its operation is so completely automatic that you never even have to oil the machinery. It is all enclosed in an air-tight steel casing—mounted on top, away from floor dirt. And the constant circulation of warm air through the coils actually prevents dust from settling.

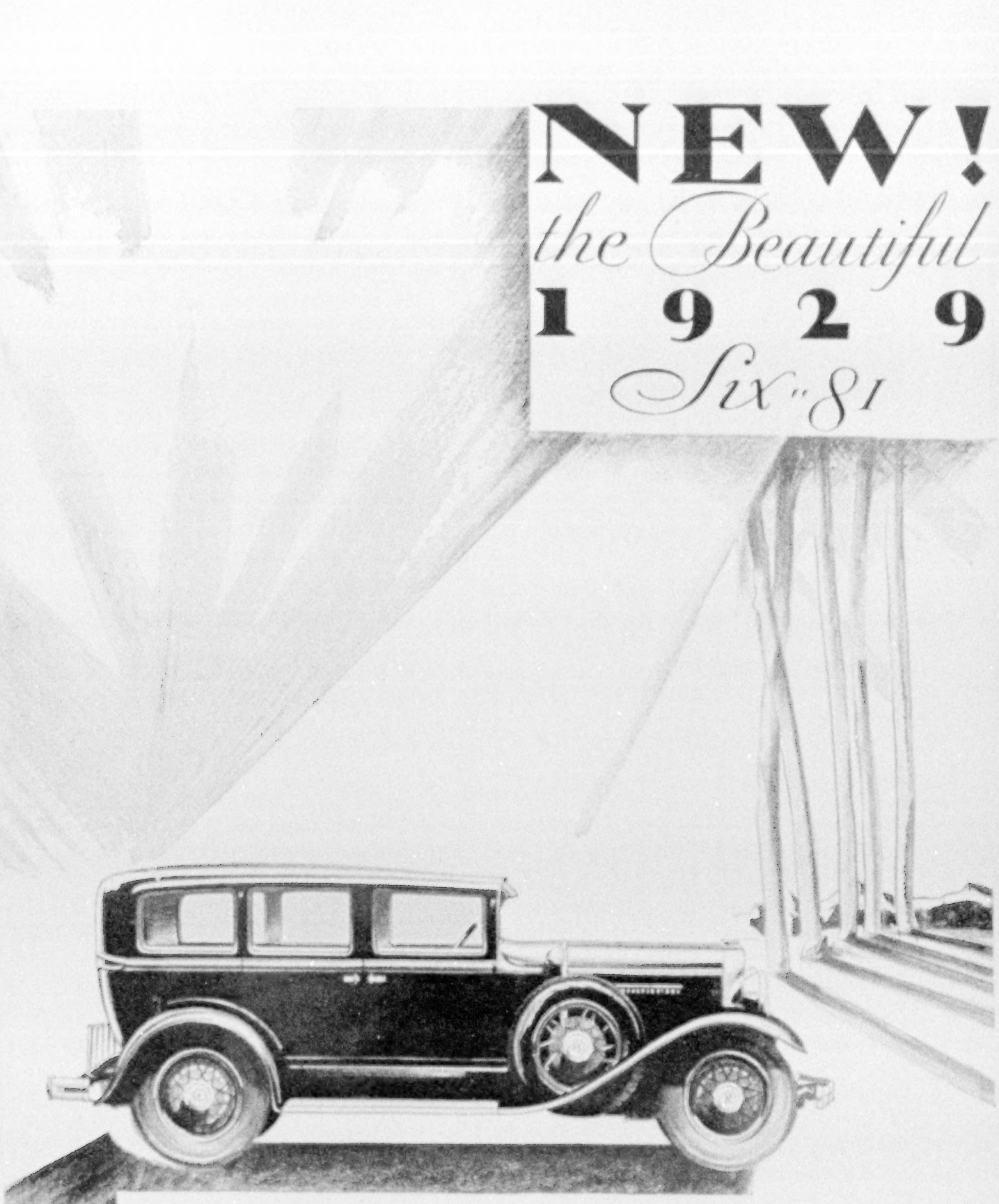
Important, too, from the standpoint of cleanliness, is the fact that this refrigerator is up-on-legs. It's so easy to mop the floor under it. In fact, every element that makes for the housewife's comfort has been carefully incorporated in these truly *modern* refrigerators. For specifications of the many models, just drop us a card for Booklet R-9.

GENERAL ELECTRIC

Refrigerator

ELECTRIC REFRIGERATION DEPARTMENT OF GENERAL ELECTRIC COMPANY HANNA BUILDING CLEVELAND, OHIO

NEW!
the Beautiful
1929
Six-81



IT'S here! And what a car! All those fine ideals you instinctively associate with Peerless have been tangibly expressed. Here's a car true to Peerless traditions—a car far in advance of its day. Built the way Peerless knows how to build for quality, staunchness, long life . . . . With clear, vivid beauty that is eloquent of truly marvelous performance.

Swift, eager power . . . Sure-footed mastery of the road . . . Smooth, silent, luxurious travel, all have reached the ultimate in this 1929 Peerless.

The creative genius that has won hosts of friends for Peerless is summed up in the new Six-81. We know that no one can drive this car without paying spontaneous tribute to its transcendent worth.

Closed models $1595 and up at factory

PEERLESS MOTOR CAR CORPORATION · *Cleveland, Ohio*

PEERLESS

ALL THAT THE NAME IMPLIES

To new shavers
—*and old:*

Make this 10-day test before you decide you've found the ultimate in a shaving cream that suits your face

GENTLEMEN:

When we decided to go into the making of a shaving cream we were told that men were fickle—that they changed shaving creams as easily as they changed their shoes.

But this we believe is wrong. For in the few years this new shaving cream has been sold, we find there is a peculiar loyalty to it. We find the younger generation is "going Palmolive" when it comes to shaving.

And we know for fact that the great majority of those who take our 10-day test remain wedded to it.

These 5 exclusive features

1. Multiplies itself in lather 250 times.
2. Softens the beard in one minute.
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4. Strong bubbles hold the hairs erect for cutting.
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No doubt your present shaving preparation suits you, yet there may be a better way. We've tried to find one for you, and will thank you to give it a test. Just send the coupon now.

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Broadcast every Wednesday night—from 9:30 to 10:30 p. m., eastern time; 8:30 to 9:30 p. m. central time—over station WEAF and 32 stations associated with The National Broadcasting Company.

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CHICAGO, ILL.

3976

10 SHAVES FREE
and a can of Palmolive After Shaving Talc

Simply insert your name and address and mail to Dept. B-1563, Palmolive, 3702 Iron St., Chicago, Ill. Residents of Wisconsin should address Palmolive, Milwaukee, Wis.

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(Please print your name and address)

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Works: Barre, Vermont

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MEMORIALS

Frigidaire Corporation, the world's largest makers of electric refrigerators

PRESENT

THE NEW FRIGIDAIRE

BEAUTIFUL • • POWERFUL • •

INCOMPARABLY QUIET

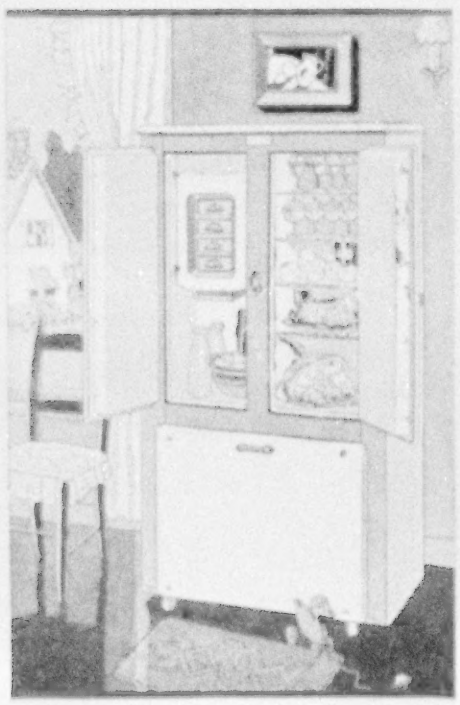
In the past twelve years, more Frigidaires have been manufactured, sold, and installed than all other electric refrigerators combined.

Surplus power...rapid ice freezing...beauty and convenience of design...greater value at low prices ...proven dependability...these have established an overwhelming preference.

And now, as the logical outgrowth of twelve years of dependable service, twelve years of constant refinement and improvement, Frigidaire engineers present the New Frigidaire, *with these outstanding advantages:* **1.** Quiet...for a lifetime. **2.** Powered to freeze ice quickly...always. **3.** Practical beauty...concealed mechanism. **4.** Conveniences designed by domestic science experts. **5.** Complete simplicity and mechanical refinement. **6.** Low first cost...low operating cost.

Incomparably quiet operation ...greater cabinet beauty and convenience developed through a careful study of modern kitchen decoration and practice...greater refrigerating power built into a new and radically improved compressor ...this is the New Frigidaire. Here is a powerful, dependable, automatic refrigerator which is truly quiet and truly beautiful. A *new* automatic refrigerator perfected by mechanical, electrical, and chemical engineers, working with practically unlimited facilities for research and experiment.

The New Frigidaire is now on display at Frigidaire show rooms in every part of the country. See these features for yourself...today. Frigidaire Corporation, Subsidiary of General Motors Corporation, Dayton, Ohio.



The New Frigidaire, incomparably quiet and powerful, has a wide variety of new models of every size, capacity and price. This beautiful Tu-Tone model, the A P-9, is finished in white and glacier gray porcelain enamel.

DUMAS' Short Stories

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The famous author of "The Count of Monte Cristo," "The Three Musketeers," etc., wrote over 200 of the most masterful, gripping, and truly powerful short stories in all literature. Scores of his plots, built from the true facts of French history, make vivid and graphic the life of the courts, the clash of dueling steel, the thunders of political eruption, the tramp of warring hosts. The force of his tremendous crises, his unerring knowledge of life and power of character portrayal, the magic with which he transports the reader into the very heart of his plots, make his the most intriguing and readable of tales. If you are not familiar with these masterful stories you are missing one of literature's rarest treats.

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79

Do You Make these Mistakes in ENGLISH?

Sherwin Cody

MANY persons say "Did you hear from him today?" They should say "Have you heard from him today?" Some spell calendar "calender" or calander." Still others say "between you and I" instead of "between you and me." It is astonishing how often "who" is used for "whom," and how frequently the simplest words are mispronounced. Few know whether to spell certain words with one or two "c's" or "m's" or "r's," or with "ie" or "ei." Most persons use only common words—colorless, flat, ordinary. Their speech and their letters are lifeless, monotonous, humdrum.

Every time you talk, every time you write, you show what you are. When you use the wrong word, when you mispronounce a word, when you punctuate incorrectly, when you use flat, ordinary words, you handicap yourself enormously. A striking command of English enables you to present your ideas clearly, forcefully, convincingly. If your language is incorrect it hurts you more than you will ever know, for people are too polite to tell you about your mistakes.

Wonderful New Invention

For many years Mr. Cody studied the problem of creating instinctive habits of using good English. After countless experiments he finally invented a simple method by which you can acquire a better command of the English language in only 15 minutes a day. Now you can stop making the mistakes which have been hurting you. Mr. Cody's students have secured more improvement in five weeks than previously had been obtained by other pupils in two years!

Under old methods rules are memorized, but correct habits are not formed. Finally the rules themselves are forgotten. The new Sherwin Cody method provides for the formation of correct habits by calling to your attention constantly only the mistakes you make—and then showing you the right way without asking you to memorize any rules.

One of the wonderful things about Mr. Cody's course is the speed with which these habit-forming practice drills can be carried out. You can write the answers to fifty questions in 15 minutes and correct your work in 5 minutes more. The drudgery and work of copying have been ended by Mr. Cody! You concentrate always on your own mistakes until it becomes "second nature" to speak and write correctly.

FREE—Book on English

A command of polished and effective English denotes education and culture. It wins friends and makes a favorable impression upon those with whom you come in contact. In business as well as in social life correct English gives you added advantages and better opportunities, while poor English handicaps you more than you now realize.

A new book explaining Mr. Cody's remarkable method is ready. If you are ever embarrassed by mistakes in grammar, spelling, punctuation, pronunciation, or if you cannot instantly command the exact words with which to express your ideas, this new free book, "How to Speak and Write Masterly English," will prove a revelation to you. Send the coupon or a letter or postal card for it now. SHERWIN CODY SCHOOL OF ENGLISH, 389 Searle Building, Rochester, N. Y.

SHERWIN CODY SCHOOL OF ENGLISH
389 Searle Building, Rochester, N. Y.

Please send me your free book, "How to Speak and Write Masterly English."

Name .....

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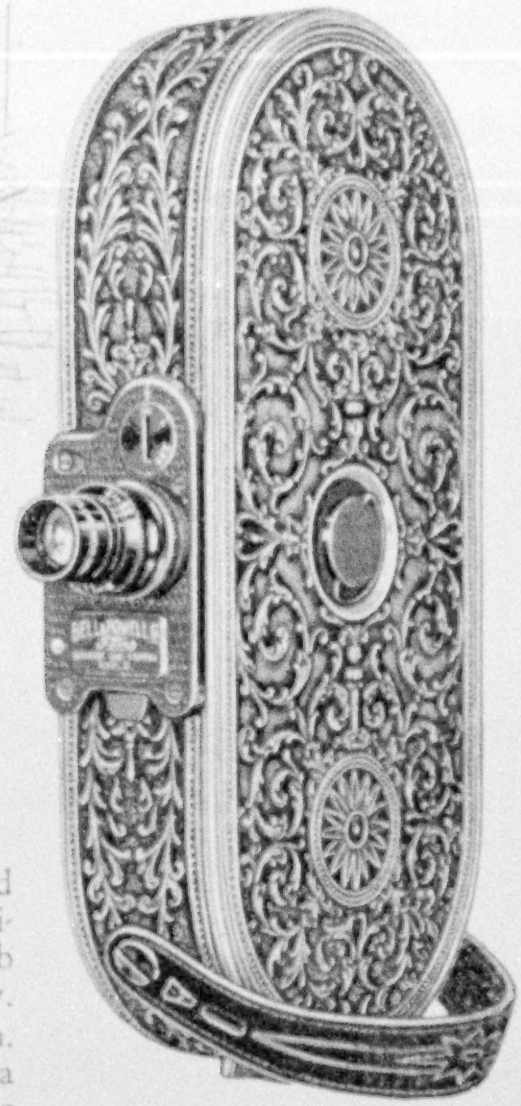
A Filmo camera abroad means movies at home!



Filmo 75

THE *futility of words* in describing travel scenes has created thousands and thousands of Filmo movie camera enthusiasts. Record *your* jaunts with a Filmo. There are now two superb models from which to choose, at the price you prefer to pay.

Look through the spy-glass viewfinder and press the button. That's all you have to do to take movies as you travel with a Bell & Howell Filmo camera. "What you see, you get", in two simple operations that get the whole action while you would be taking one ordinary snapshot.

The new Filmo 75, shown above, fits your coat pocket. It weighs only three and one-half pounds and operates *easily* with one hand. Choose from three beautiful colors: Walnut Brown, Ebony Black, Silver Birch. Each one jewel-like in beauty. Price, with genuine Scotch grained leather, plush lined carrying case, $120.

Filmo 70, shown in oval, is the original automatic Filmo. Priced at $180, with case, it is the most adaptable, most highly perfected personal movie camera available at any price. Has many of the features of flexibility and precision found in Bell & Howell $5,000 professional cameras, with which most theatre movies are made.

"What you see, you get"

Both cameras have the interchangeable lens feature so valuable to travelers. And both use Eastman Safety Film (16mm.), in the yellow box, obtainable throughout the world at practically all stores handling cameras and supplies. No additional charge is made for developing your films and returning them postpaid to you.

Then Filmo Projector brings your movies to life—with all the clarity and brilliance of theatre movies. For twenty-one years Bell & Howell *professional* cameras and equipment have been used as the standard in making nearly all movies shown in best theatres. Filmo is equally precise in making movies for *you*.

Secure your Filmo now—for travel, for football, for movies of children, family and friends. Mail coupon for fully descriptive new book.

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GEORGIA · MARBLE

To the man who is 35 *and* DISSATISFIED

WE DELIBERATELY pass over a large proportion of the readers of the National Geographic in order to address this page directly to *men in their thirties.*

There is a powerful reason for this.

The dissatisfied man of twenty-five is not usually in a difficult position. He has few responsibilities; he can move easily; he can take a chance.

But from thirty-five to forty is the age of crisis. In these years a man either marks out the course which leads to definite advancement or settles into permanent unhappiness. There are thousands who see the years passing with a feeling close to desperation.

They say:

"I must make more money," but they have no plan for making more.
"There is no future for me," but they see no other opening.
"I am managing to scrape along now, but how in the world will I ever educate my children?"

To men whose minds are constantly—and often almost hopelessly—at work on such thoughts, this page is addressed. It is devoid of rhetoric. It is plain, blunt common sense.

Let us get one thing straight at the very start—

We do not want you unless you want us

There is the dissatisfied man who will *do* something and the one who won't. We feel sorry for the latter, but we cannot afford to enrol him. We have a reputation for training men who—as a result of our training—earn large salaries and hold responsible positions. That reputation must be maintained. We can do much, but we cannot *make* a man succeed who will not help himself. So rest assured you will not be unduly *urged* into anything.

Now what can happen to

A dissatisfied man who acts?

We wish we could answer that question by letting you read the letters that come to us in every mail. Here is one, for example—from Victor F. Stine, of Hagerstown, Md.: "I was floundering around without a definite goal," he says, "and was seriously considering a Civil Service appointment." (You can tell from that how hopeless he was. A Civil Service appointment means a few thousand dollars a year *for life.*)

"The study of the Course and Service was not a hardship," he continues, "rather it was a real pleasure, because it is so practical and inspiring thruout." (The *method* of the Course makes it practical and inspiring. We teach business not alone thru study, but thru *practice.* You learn executive thinking by meeting executive problems and making executive decisions.) "Added self-confidence and increased vision gained from the Course," says Mr. Stine, "enabled me to accept and discharge added responsibilities successfully."

He is Secretary now of the organization in which he was then a dissatisfied cog.

"Forging Ahead in Business"

For a man like Mr. Stine we can achieve really great results. By learning, thru the Modern Business Course and Service, the necessary fundamental facts of *all departments* of business, he insures his success. His judgment, his value, increase. The closed roads open. The worries disappear.

We attach a coupon to this advertisement. It is a little thing, but our experience proves that it separates out of every hundred readers the few who can act. If you are one of these let us mail you that wonderful little book, "Forging Ahead in Business." For thousands it has turned dissatisfaction into immediate progress.

ALEXANDER HAMILTON INSTITUTE

Executive Training for Business Men

ALEXANDER HAMILTON INSTITUTE
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Send me the new revised edition of "Forging Ahead in Business," which I may keep without charge.

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Please write plainly

Business Address .....

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IN CANADA, *address the Alexander Hamilton Institute, Limited, C. P. R. Bldg., Toronto*
IN ENGLAND, *67 Great Russell St., London* IN AUSTRALIA, *11c Castlereagh St., Sydney*

4 out of 5 may have teeth so gleaming white STILL . .

THAT dark day of despair, when we find priceless health slipping away and with it youth and happiness, is invariably the price of neglect. And no trouble however insidious does more than Pyorrhea to hurry this unwelcome moment.

This condition is rightly called the disease-of-neglect.

Thinking they are secure when teeth are snowy white and seemingly sound, 4 persons out of 5 after forty and thousands younger (many dental clinics give an even higher percentage) suddenly find themselves victims of Pyorrhea. This dread foe ignores the teeth and attacks the gums. It sweeps through the system often causing a host of serious diseases that ravage health.

There is one sensible way to combat this common trouble: Have your dentist examine teeth and gums at least once every six months. And start using Forhan's for the Gums—every morning, every night.

More Than a Tooth Paste

This dentifrice, the proved formula of R. J. Forhan, D. D. S., and compounded with Forhan's Pyorrhea Astringent used by dentists in treating the gums, is far more than ordinary tooth paste. It does everything a tooth paste should do and more too.

Without the use of harsh abrasives it cleans teeth and keeps them white. Also, it protects them against acids which cause decay.

And in addition it helps to firm gums and keep them sound. As you know, Pyorrhea seldom attacks healthy gums.

Don't wait until gums bleed and recede from teeth, until teeth loosen in their sockets. Start using Forhan's for the gums, today. Teach your children this good habit. They'll thank you in later years. Get a tube from your druggist, 35c and 60c. Forhan Company, New York

Make This 10 Day Test

Lazy, lethargic gums invite disease. And the only way to keep them firm, sound and healthy is to massage them daily just as a woman massages her face to keep it glowing with youth and free from the signs of age. Forhan's for the Gums is designed for gum massaging. Make this 10 day test. Morning and night, before brushing your teeth with Forhan's, exercise your gums, closely following the directions in the booklet that comes with each tube . . . See how much better they look and feel!

Your Teeth Are Only As Healthy As Your Gums!

Forhan's *for the gums*

YOUR TEETH ARE ONLY AS HEALTHY AS YOUR GUMS

Beware of Spiders

BACK of a partition where passers-by cannot see him, the loan shark spins his web—and waits. In his show-windows he displays generous-sounding proposals. He says, "We will trust you when nobody else will—*if* you have a job."

Sometimes he boldly tells his story on posters and handbills—"Money for salaried men. No mortgages—no indorsement—no collateral—no questions asked. We let you have money at the time you apply for it." He pledges strict secrecy and low rates of interest. He describes himself as "the wage-earner's only friend in time of need" —spider-webs to catch the unwary.

The loan shark knows that the world is full of unfortunate men and women who will promise to pay almost any price in the future for a little cash in hand *now*.

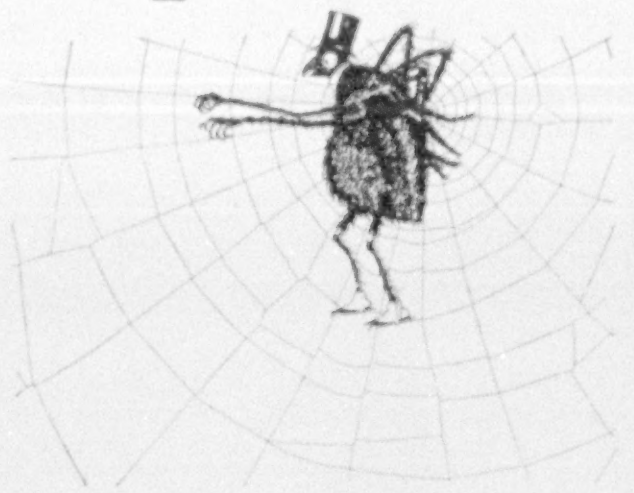
Driven by extravagance or unexpected misfortune, the needy one, when caught, pays a truly terrible price.

The loan shark knows that many of his victims will be unable to pay on the appointed date. He, therefore, extends the time but increases the amount of the loan. Month by month it grows till it crushes. The loan shark's favorite lash on the unhappy victim is "Pay—pay more—or I will expose you. Pay or I will make you lose your job." Sadly enough, sometimes his threat is carried out and the job is lost.

Imagine a frightened employee paying $2.00 a week "interest" on a $10.00 loan for three years —156 weeks—and still "owing" the original $10.00 although he had paid $312.00. The man who paid this lived in the capital of a great State.

A man who made $60 a month borrowed $75 from a loan shark. For a period of three years, he paid each month $21.85 interest—more than one-third of his wages—without reducing the principal debt.

The man past middle age who has never saved a cent can hope perhaps for but little more than continuing health and steady employment, but younger men and women can and should plan complete financial independence for themselves in their later years of life.



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If you must borrow, make sure the lender is licensed and supervised by the State.

A booklet prepared by the Metropolitan will be of assistance in showing how to avoid the loan shark's web. It will be sent free and without obligation on your part. Address Booklet Department, Metropolitan Life Insurance Company, Number One Madison Avenue, New York City and ask for Booklet No. 98N.

Haley Fiske, *President.*

Many millions of dollars are loaned annually by loan sharks. These millions in loans cost borrowers as much more in interest, together with untold mental distress.

Prosecution, though helpful, is not a permanent remedy for the loan shark evil. People still need money and will make any promise for the future in return for present relief. Legitimate remedial and business institutions are therefore necessary. Most States permit the chartering of limited-dividend, semi-philanthropic remedial loan societies.

The Uniform Small Loan Law drafted by the Russell Sage Foundation is in use in twenty-three States and has done much to better commercial money lending conditions in those States.

This Foundation has also assisted in the development of credit unions which are mutual loan and thrift associations. The credit union collects the savings of its membership and reloans these savings to finance the individual needs of the same group.

The Department of Remedial Loans offers its assistance in organizing credit unions and remedial loan associations or in advising loan shark victims. Address, Russell Sage Foundation, 130 East 22nd Street, New York, N. Y.

METROPOLITAN LIFE INSURANCE COMPANY—NEW YORK

Biggest in the World, More Assets, More Policyholders, More Insurance in force, More new Insurance each year

How many of these Whitman's packages do you know?

The Whitman Quality Group of candy packages are the social messengers of America. How many do you know? Each one has a distinct assortment . . . a real personality . . . and was designed in contents to meet a particular candy taste. Which is your favorite?

Whitman's combination of charm in box and name, and deliciousness in individual pieces and assortments have made Whitman's America's choice in quality sweets.

Each famous member of Whitman's Quality Group differs in every respect—except in quality.

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THE NATIONAL GEOGRAPHIC MAGAZINE

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BY SEAPLANE TO SIX CONTINENTS

Cruising 60,000 Miles, Italian Argonauts of the Air See World Geography Unroll, and Break New Sky Trails Over Vast Brazilian Jungles

BY COMMANDER FRANCESCO DE PINEDO*

Royal Italian Air Force

SINDBAD, tied to a roc's foot, flew over no stranger sights than I.

Along far sky lanes I sped, along new paths which aviation blazes over the world. Seas, islands, States, republics, old pagan kingdoms of wealth and power—they all slid under me. From my plane I saw a motion picture of travel scenes 60,000 miles long.

A glittering city of golden domes; then, rushing from the far horizon, a desert, with palm-fringed oases, and the camel herds and goat-hair tents of nomads; then seas and more temples, of other faiths; and inarticulate millions toiling with rice and rubber, with teak and tea. Again, wind-whipped tropic blue water and green jungles with naked bow-and-arrow men staring up wild-eyed at my great gas-burning mechanical goose. And thus on to a far continent of boomerang throwers and kangaroos.

Arabia, India, Australia,† to far Japan—along their kaleidoscopic coasts I cruised. Beneath my fascinated eyes unrolled more geography than all the world knew when Sandwich Islanders slew Captain Cook. In 26 years Marco Polo made less mileage than I in a few weeks. Wings!

BENEATH A SPEEDING PLANE THE WORLD MAP UNROLLS

Under the Southern Cross I flew, across stormy Arafura Sea and the weed-grown bones of forgotten ships wrecked on lonely atolls; into bights and bays that Tasman and Torres knew, and Drake and Magellan. In fancy I phrased devastating oaths those honest sailor men might swear, could they look up now from gilded, carven poops of their careening caravels and see roaring overhead an all-metal *Golden Hind* of modern geographic exploration!

Savage New Guinea; smiling, happy Philippines; haughty, rock-perched Hong Kong; cynical Shanghai, Babylon of the Far East—I saw them all. And Imperial Tokyo, and all the busy ports of jaunty Japan, won to world trade a bare fourscore years ago by sagacious Yankee sailors.

Back, over an island-dotted sea on whose floor great crabs crawl on the rusting, battered fleet of Rozhestvenski. No war planes in Togo's time. Not even dreams then of men shot from Golden

* In the translation and preparation of his article for publication in English, the author acknowledges with appreciation the coöperation of Mr. Frederick Simpich, of the staff of the NATIONAL GEOGRAPHIC MAGAZINE.

† See, also, in the NATIONAL GEOGRAPHIC MAGAZINE, "From London to Australia by Aëroplane," by Sir Ross Smith, K. B. E., March, 1921, and "Seeing the World from the Air," by Sir Alan J. Cobham, March, 1928.

CENTURIES AFTER COLUMBUS A NEW "SANTA MARÍA"—A CARAVEL OF THE SKIES—SAILS WESTWARD FOR THE NEW WORLD

The seaplane's daring feat, hopping from the upper Paraguay to the Amazon—a perilous ride over that vast, oceanlike green forest called the Matto Grosso—revealed to the Italians a region never before seen by flyers.

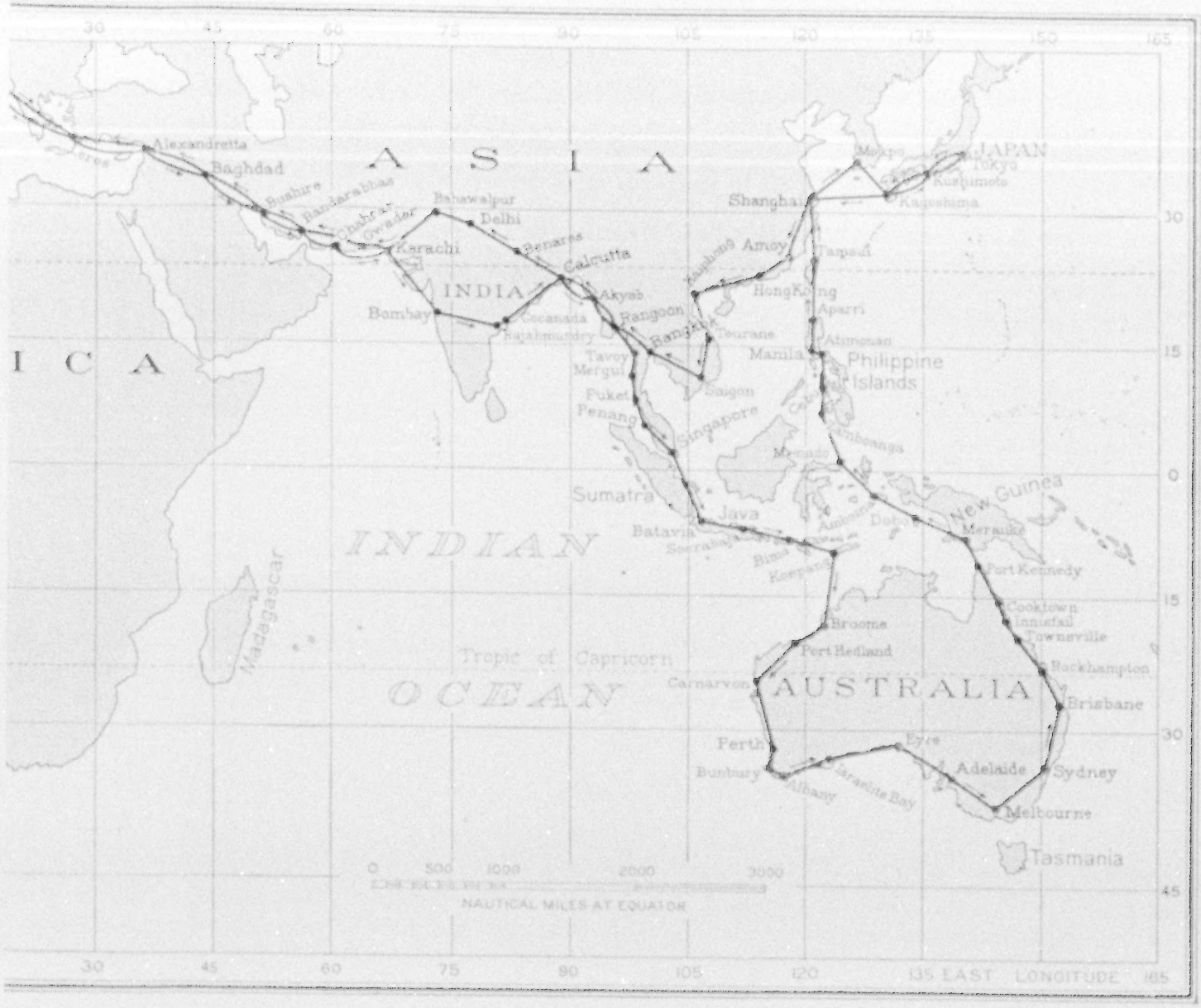
Gate to Botany Bay in roaring, self-propelled rockets, 7,500 miles over the Pacific, racing rainbows or streaking their fiery, cometlike tail through the blind blackness of tumbling typhoons, yet hitting tiny, mid-ocean isles as squarely as expert marksmen make an easy bull's-eye at 50 feet.* Incredible, the feats of air navigation!

Blindfolded I could take my plane to pieces and put it together again; yet even now, after perhaps 75,000 miles of air travel, even to me an airplane is still a miracle of imponderable achievement. With what dumfounding speed it reveals the world to flyers; to-day in America, to-morrow in Europe!

OVER TEMPLES, TIGER TRAPS, AND PIRATE JUNKS

Down the China coast I roared, over warships and pirate junks; past ancient Amoy, past Canton, war base of one faction in a free-for-all fight of 400,000,000 men. Fighting for what? I don't know. Probably they don't. To Saigon and away for Bangkok, over a hot, sticky land of elephants, tin mines, and tiger traps. On to Rangoon; to the City of Dreadful Night; to Benares of pagan faith, of burning ghats and blind mil-

* In an early number of the NATIONAL GEOGRAPHIC MAGAZINE, Capt. Charles Kingsford-Smith, commander of the *Southern Cross*, and his copilot, Capt. Charles P. T. Ulm, will give the members of the National Geographic Society the first official narrative, fully illustrated, of their epochal transpacific flight from Oakland, California, to Sydney, Australia, via Honolulu.



Drawn by A. H. Bumstead

IN HIS 60,000-MILE AIR CRUISE DE PINEDO CHARTED A SEAPLANE COURSE TOUCHING SIX CONTINENTS AND THREE OCEANS

The long, tortuous mark on the map, tracing the flight from Rome to Australia and the Far East, reveals into what obscure nooks and corners of the world the trained aviator took his seaplane.

lions bathing in foul but sacred Ganges. Quickened as fancy is by flying, the airman goes so fast that even imagination can't keep up!

So over India via Delhi and Karachi where sail meets rail for Quetta. Thus I took a seaplane, not an amphibian, across India. And here is the lesson: Hopping from sea to river, from river to lake, seaplanes in careful jumps can touch most big cities of the world; for nearly all are sea or river ports. And water, barring big waves or fast currents, is the same everywhere to land on or start from. Wherein seaplanes beat airplanes, able to use only smooth, hard ground.

Ormuz, reputed treasure isle of long ago, lifted its empty, oddly colored rock as I flew over, northwest, along the Persian littoral. On beaches ring-nosed Arab women in black toiled over stinking piles of Bahrein pearl shells. Basra, set amid date orchards above mud-forted Muhammareh, was my way station for Baghdad. Easy going from there, in warm, clear Mesopotamian air. Al Qurna, where Euphrates and Tigris join to make the Shatt al-Arab, marks what some Bible readers say is Old Eden. On the river bank rises Ezra's tomb; Jews, Arabs, Christians—they all make his tomb a shrine and quarrel now over whose prophet he was.

IN THE WAKE OF SINDBAD, THE SAILOR

Farther upstream is the war-famous Arab mud town of Kut, or Kut-el-Amarah. Roundabout, in the sandy plain,

Photograph by Maynard Owen Williams

HORSE-DRAWN CHARIOTS OF THE PERSIAN KINGS ONCE ROLLED WHERE TOURIST AUTOS NOW PARK ABOUT RUINED CTESIPHON

Thirteen hundred years ago and more, this astounding structure, known then as the White Palace of King Khosrau (Chosroes), was built on the plains of old Babylonia, near Baghdad. Known now as the Arch of Ctesiphon, this slowly falling ruin is one of the wonders of the architectural world. Some sections have crumbled in the past 20 years. The vaulted hall was the audience room.

BAGHDAD STILL LAUGHS AT JOKES OLD WHEN MOHAMMED WAS A BOY

To sit in the bazaar, smoke a waterpipe, and gossip or listen to a professional story-teller repeat the tales of Harun-al-Rashid's time is still the Baghdaddi's chief delight.

BABIES OF THE "LAND DOWN UNDER" CUT THEIR TEETH ON BOOMERANGS

His seaplane cruise through the Far East and around Australia gave Commander de Pinedo glimpses of many an odd nook and watery corner of the world. Natives of Broome, northwestern Australia.

Photograph by Airspy

THROUGH THE HEART OF BUSY MELBOURNE THE RIVER YARRA WINDS ITS GRACEFUL WAY

From a few sod huts in 1835, Melbourne has grown to be Australia's greatest city. With its libraries, university and colleges, churches, theaters, parks, and race tracks, it is at once the center of culture and sport in this progressive island continent.

one still sees the trenches dug by Townshend and his long-beleaguered British army. In scattered river hamlets, star-gazers, remnant of an ancient cult, still wading astream on clear nights, praying to planetary gods. To my left, ruined Ctesiphon; ahead now the crumbling walls and glistening domes and minarets, the palms and synagogues, of Baghdad, old home of Harun-al-Rashid. Fain would I have tarried, to sit cross-legged on a coffee-shop tucket (bench), where story-tellers in turbans drone the racy, unexpurgated tales of Arabian Nights; or to sample that seductive arrack drink and hear the East's oldest flute tune played while a lithe-limbed girl dances.

But *dolce far niente* doesn't mix with flying on schedule.

Now west again, past fields where once a repentant king ate grass. Then over a long file of mule-riding Persian pilgrims, taking their mummified dead to holy graves at Kerbela, shrine of the Prophet's kinsman. Then to Hit of the Hittites, where Noah got bitumen to calk his ark; and for long hours more toward Damascus, over an empty desert, where engine trouble and descent would have marked the end of all troubles for me.

And so home to Rome.

I had flown 30,000 miles. No long, sensational hops, but scores of stops, made at places without arrangements for handling planes. In this I felt my long cruise had shown once more the dependability of seaplanes. They need no specially prepared landing field. Related thoughts arise. A seaplane is a mechanical goose; it flies and swims. I even used a jib sail. Forced down, with engines dead, I could still keep going (page 255).

SEAPLANES NEED NO MAN-MADE LANDING FIELDS

Up and down rivers, along coasts, and in hops from water to water, the seaplane gives rapid transit for passengers, mail, and parcel goods.

Look at the map. Most big cities, as I have said, are on rivers or coasts. Fast seaplanes, landing at city water fronts, could easily tie up towns like Chicago and Milwaukee, St. Louis and Memphis, New Orleans and Galveston, to give only casual examples. Using seaplanes, people of Boston, New York, Philadelphia—in fact, of any big sea or river port, might live miles away in suburbs near water, and yet get to and from cities with speed and ease, parking at fixed places along the cities' water fronts. This will come. It will cause cities to spread, remote suburbs to grow, as did motor cars.

Flying grows on one. My Tokyo trip had shown what a faithful coastwise vehicle a seaplane is, and it whetted my desire to give this craft an even harder trial.

Why not cross to South America and explore the vast jungles of Brazil, using the rivers as roads, flying from one to another, over the famous Matto Grosso!

"Go ahead," urged Premier Mussolini. "Take a fine, new seaplane," said he in substance. "And go to North America, while you're at it, and home across the North Atlantic. Carry Italy's greetings to the New World."

ANOTHER "SANTA MARÍA" SAILS FROM ITALY TO FIND AMERICA—FROM THE AIR

Santa Maria, my new ship, was christened after the craft Columbus sailed to discover America. I planned to fly to Bolama, on the Portuguese Guinea coast of west Africa; thence over the Atlantic to Natal, in Brazil.

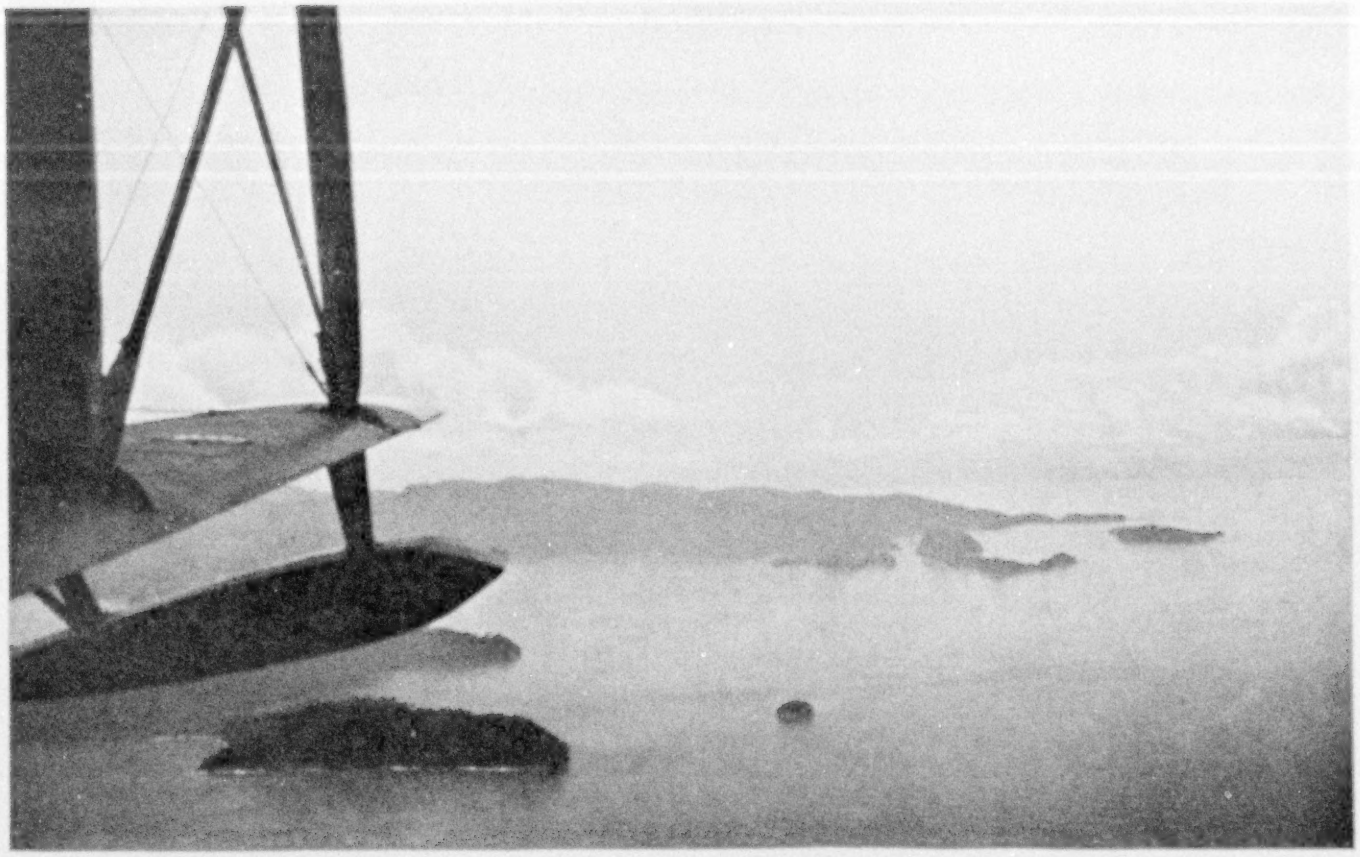
My plane was a Savoia 55. This is a double-boat monoplane, powered by two Isotta Fraschini engines of the Asso 500 horsepower type. Its fuel capacity is 4,000 liters (1,056 gallons) and it attains minimum gas and oil economy at about 100 miles an hour.

As relief pilot and navigator I chose Capt. Carlo del Prete, of the Royal Italian Air Force. Vitale Zacchetti, chief engineer of the Isotta Fraschini, went as mechanic.

To the choice of astronomical instruments we gave greatest care. On this perilous venture, to know always just where we were might be the difference between life and death, whether in fair weather or foul. And there would be plenty of foul days, especially over the big Brazilian jungles. And no weather prophets there!

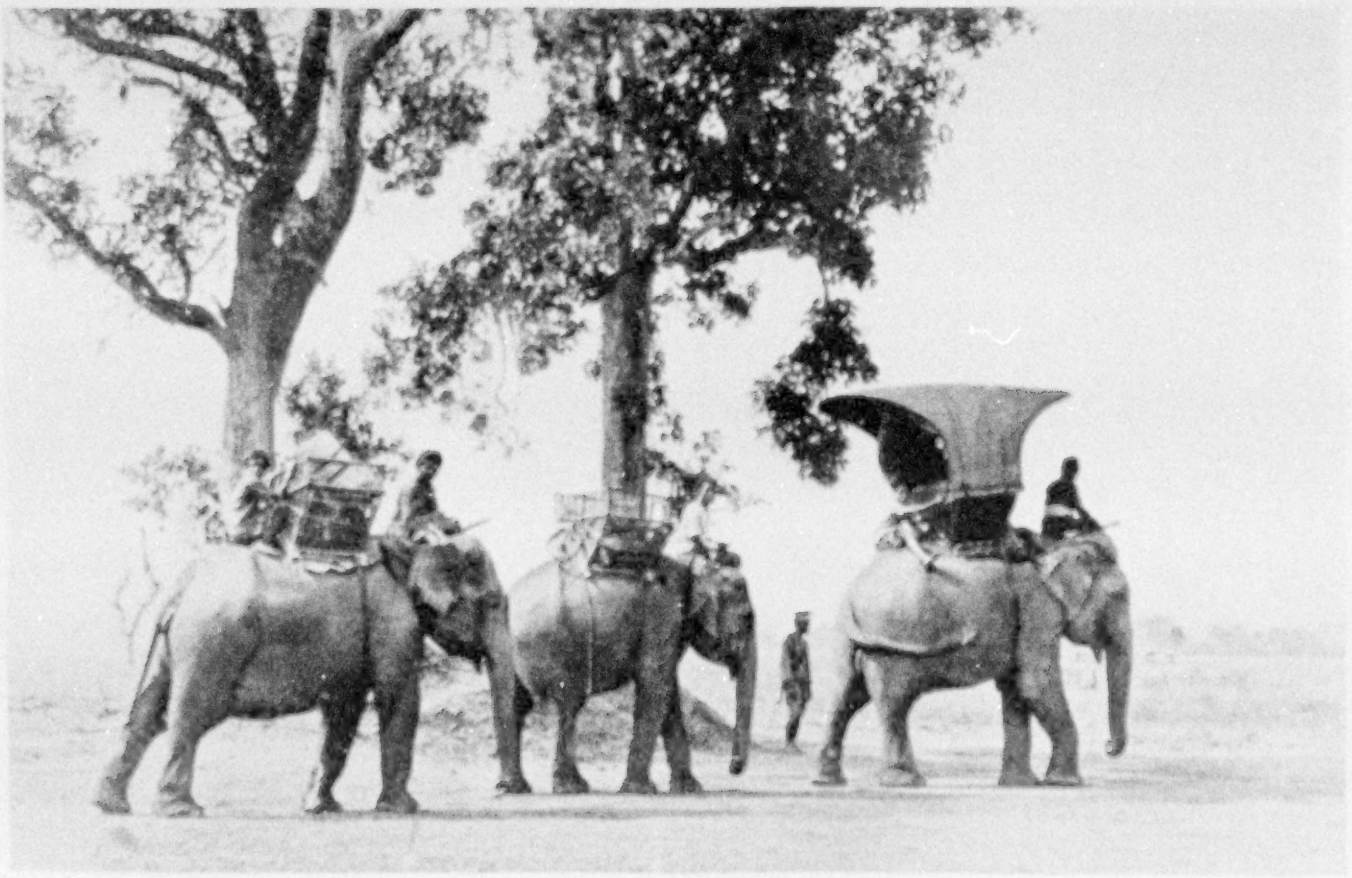
But, after all, a weather bureau can only predict storms; it cannot prevent them.

Taking delivery of our new plane at



SOUTH OF PUKET ISLAND, OFF THE WEST COAST OF SIAM

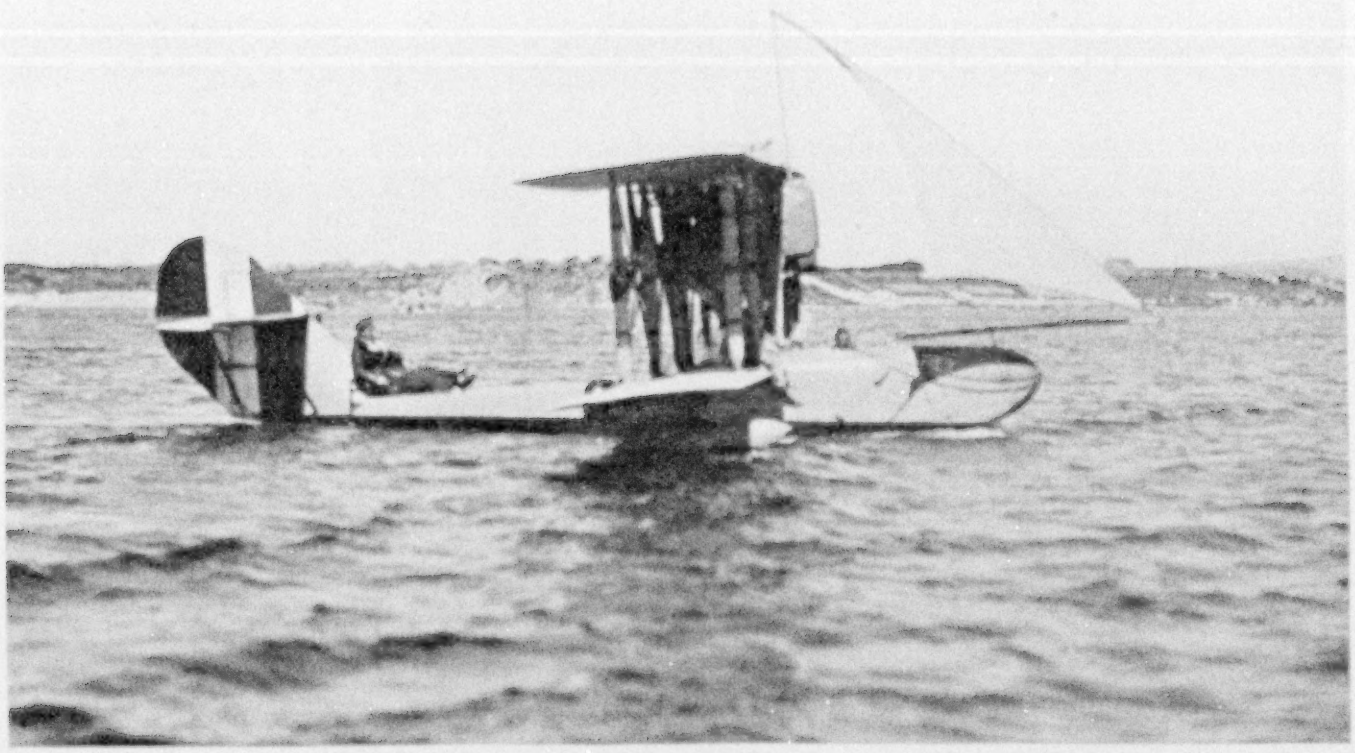
Over tropical seas, over the grass huts of jungle folk, and over the hot, fetid homes of tigers and elephants, De Pinedo's monoplane winged its tireless way.



Photographs from Comdr. Francesco de Pinedo

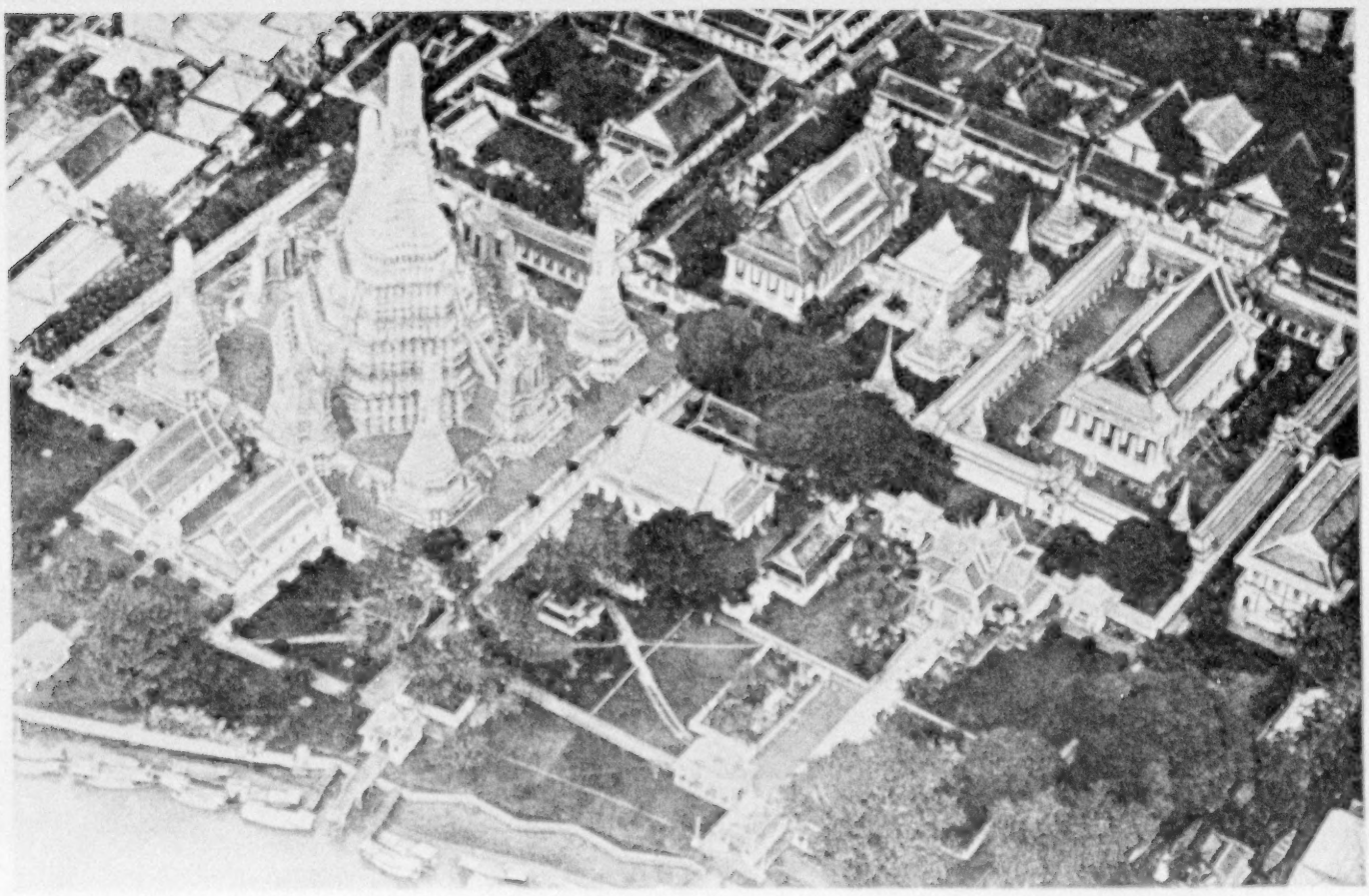
THE KING OF SIAM RIDES THESE ELEPHANTS

Few lands hold so much big game as Siam. The tiger, leopard, bear, rhinoceros, and various breeds of giant water buffaloes occur. Elephants run wild. Natives trap them and train them for transport work (see "The Warfare of the Jungle Folk," by Merian C. Cooper and Ernest B. Schoedsack, in the NATIONAL GEOGRAPHIC MAGAZINE for February, 1928).



RIGGED WITH A JIB SAIL, A SEAPLANE CAN BE SAILED

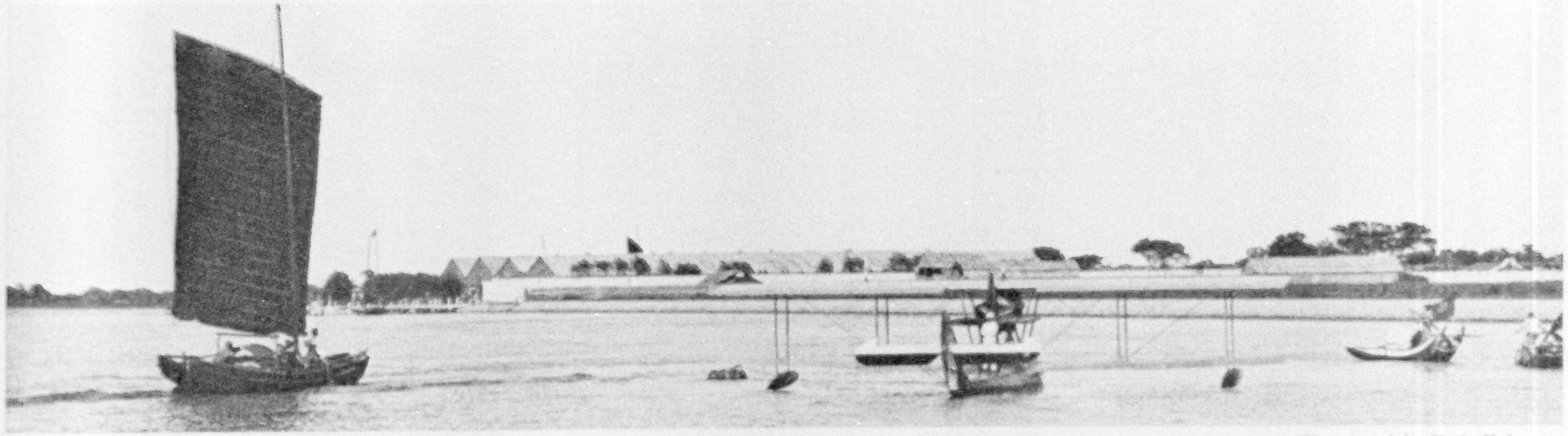
The biplane flying boat, in which Commander de Pinedo made his lengthy voyage from Rome to Australia, Japan, and return (see, also, text, page 253).



Photographs from Comdr. Francesco de Pinedo

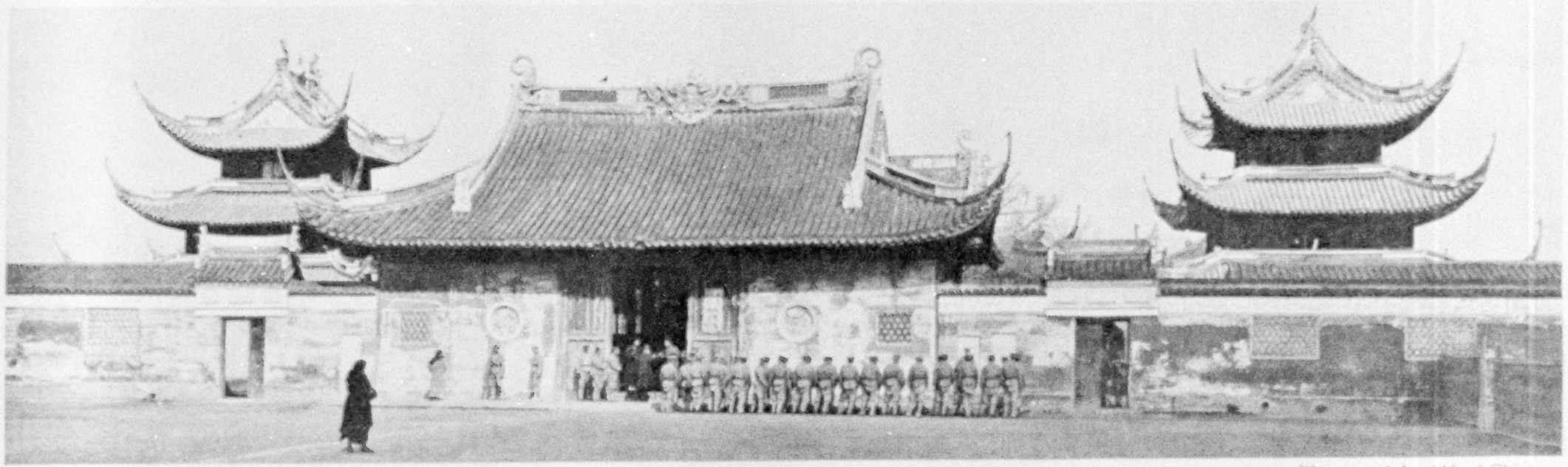
THE GRACEFUL WAT CHANG OF BANGKOK

The architecture, drawing, carving, music, and dancing of the Siamese reveal them as true artists, faithful to old Indo-Chinese conceptions. The influence of the ancient Khmer builders is reflected in all Siamese as well as Cambodian temples (see, also, "Four Faces of Siva: The Mystery of Angkor," pages 302 to 332).



Photograph by E. A. Kobza

RIVER JUNKS AND ONE-OARED SAMPANS COME TO STARE AT THE FLYING BOAT ON THE HWANGPOO, NEAR SHANGHAI



Photograph by Alfred Chiai

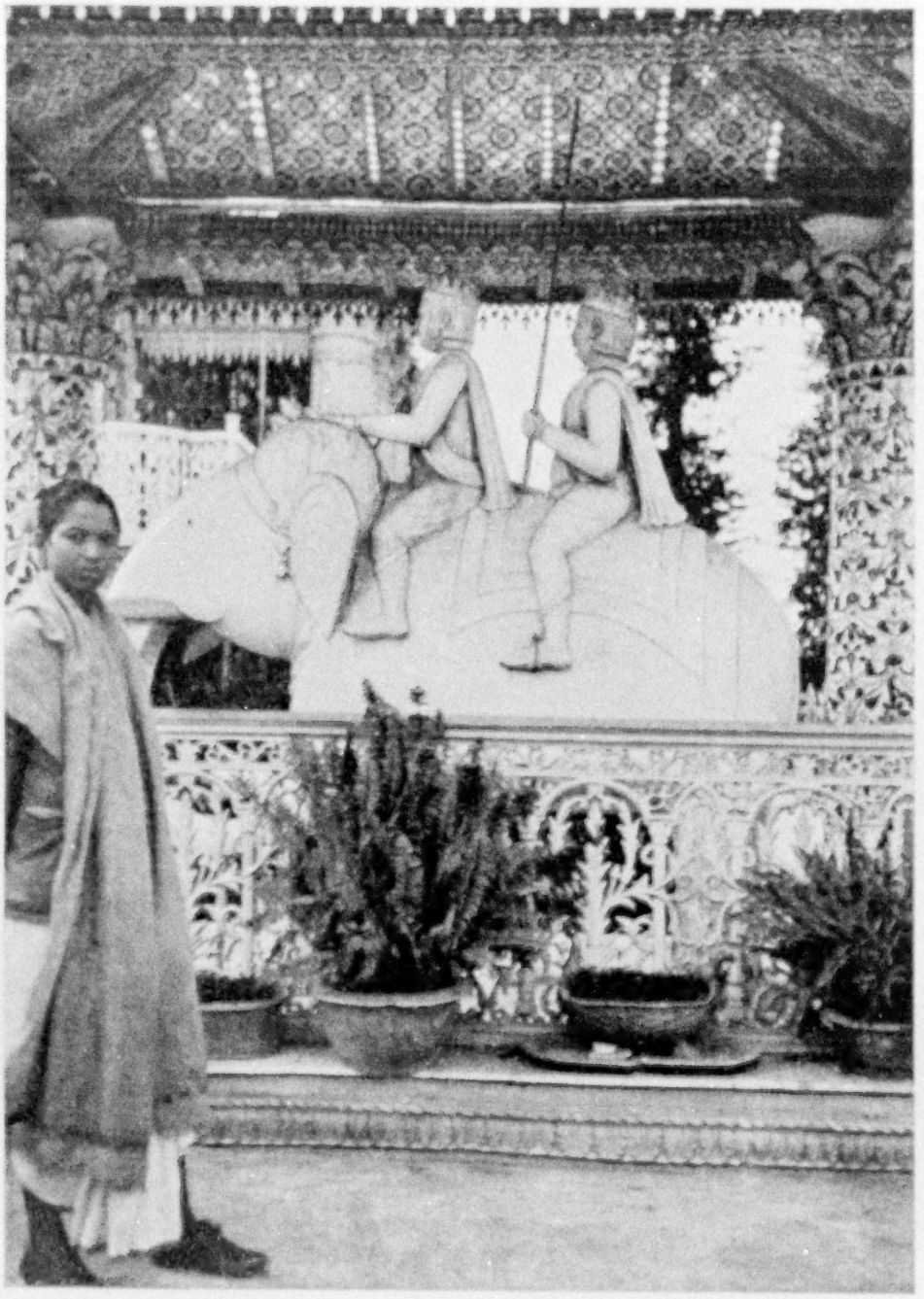
DOWN THE FAR COAST OF ANCIENT CHINA, OVER TEMPLE AND PAGODA, ROARED THE GAS-BURNING GOOSE

In China, too, most big cities are built near water. Tientsin, Chefoo, Shanghai, Hankow, Foochow, Amoy, Hong Kong, Canton—they all stand on rivers or by the sea. When commercial flying expands in the Orient, seaplanes will make easy paths along the China coast and up her many rivers. A temple at Shanghai, used now by the military.

Photograph from Comdr. Francesco de Pinedo

CURIOUS VILLAGERS OF KUSHIMOTO, 80 MILES SOUTH OF OSAKA, WELCOME THE ITALIAN FLYERS

Slowly yielding ancient national dress to European styles, Japanese crowds reveal striking sartorial contrasts. Painted paper parasols, kimonos for men's street wear, with huge characters sprawling on their backs, and wooden *geta*, or clogs, on which women go clattering over cement pavements—all these one sees, mixed with standardized straw hats, brown derbies, and ready-made clothes of near-American cut. Children frolic in big polkadots.



Photograph by Joseph F. Rock

OVER STRANGE LANDS OF PAGAN FAITHS CRUISED THE ITALIAN ARGONAUTS OF THE AIR

But planes go so fast and such close attention must be paid to instruments and piloting that flyers have little time to admire the sights that pass below. Elaborate marble filigree balustrades and columns distinguish the beautiful new Jain Temple in Calcutta.

Sesto Calende, we flew down to Cagliari to load gas and equipment for the first leg of our 25,000-mile voyage. What a wild day! Passing Leghorn, we saw ships being torn from their moorings by the stormy sea. My secretary, with his typewriter, made this first short hop, intending to write farewell letters for me; but air sickness laid him flat—too flat, in fact, to recall that he even had a typewriter.

Sunday morning, February 13, 1927, broke clear and bitter cold. On a frosty field, by torchlight, we said official goodbyes and were off from Italy, bound for Bolama.

Like tiny white houses set in a real-estate agent's show window, Casablanca charmed us as we flew over.

Past Mogador, far to our left, scattered palms and far-away sand wastes marked the Sahara's edge. Here and there, on the lonely beach below, we saw the ribs of wrecks of lost ships. Even if sailors survived, I reflected, getting ashore along any of these notorious spots probably meant death at bandit hands.

MOORISH BANDITS SLAY A STRANDED AVIATOR

Pushed on the tail by a stiff north wind, we landed, after a 10-hour cruise, at Villa Cisneros, coast capital of Río de Oro, Spain's west African colony, in almost the same latitude as Cuba.

On the sand stood two planes.

"Whose?" I wondered.

"They belong to the Latécoère Company, which runs an air line to Dakar," an informant told me afterward. "Once a week planes bring our mail from Europe. Moors killed an air pilot a few days ago, when engine trouble forced him down."

"At least the Moors will have to swim to get me," I reflected, "if I am forced down hereabouts."

Everybody was still in bed when we got to Bolama, about 8 o'clock next morning. Why not? Nothing to do and hot enough to broil monkey meat before the sun was two hours high.

I chose Bolama as the point from which

Photograph from Comdr. Francesco de Pinedo

THE ITALIAN FLYERS, EN ROUTE FROM KARACHI TO BAGHDAD, STOP FOR GAS IN THE SHALLOW HARBOR OF BUSHIRE

Arabs say that hell lies just below the Persian Gulf and keeps it warm. Steamers plying its waters stretch double awnings and hose down the decks to combat the terrific heat. Since the development of the Karun River oil fields, ugly, somnolent, sunburnt old Persian coast towns have come to new life. The containers in the left foreground are drums of gasoline.

to make my transatlantic hop because it was near, in direct line, to the Brazilian coast.

Certainly I didn't choose this point in Portuguese Guinea for scenery or the social advantage of hobnobbing with its twenty-odd native tribes—nude, superstitious, and odoriferous. Nearly 500 years ago the Portuguese gained a toe-hold here, and good crops, many similar to those of Texas, are grown by the natives, yet even now the Guinea country, habitat of elephants, panthers, hippos, and huge snakes, is but slightly developed. Neither Christianity nor Mohammedanism has made much impression even on those tribes nearest the coast. Many of the inhabitants that I saw on Bolama Island wore collars of shell or coral and had "decorated" their bodies with fancy scar patterns made by long cuts.

On the Bissagos Islands, near Bolama live some fierce-fighting natives. To quell one of their outbreaks the Portuguese sent an airplane against them, the first they had seen. Though they believed it a terrible winged monster, no panic occurred; with every weapon available, they boldly rushed out to fire at it. Safe at home, with our dinners and dances, our books and theaters, how little we yet know of many bizarre nooks and crannies of the world.

To help clean and load our plane at Bolama, we hired a tiny black named Ali. Just as we were about to hop off, I found him stowed away in the plane. Like a tramp on a freight train, he fought to

Photograph by Flandrin

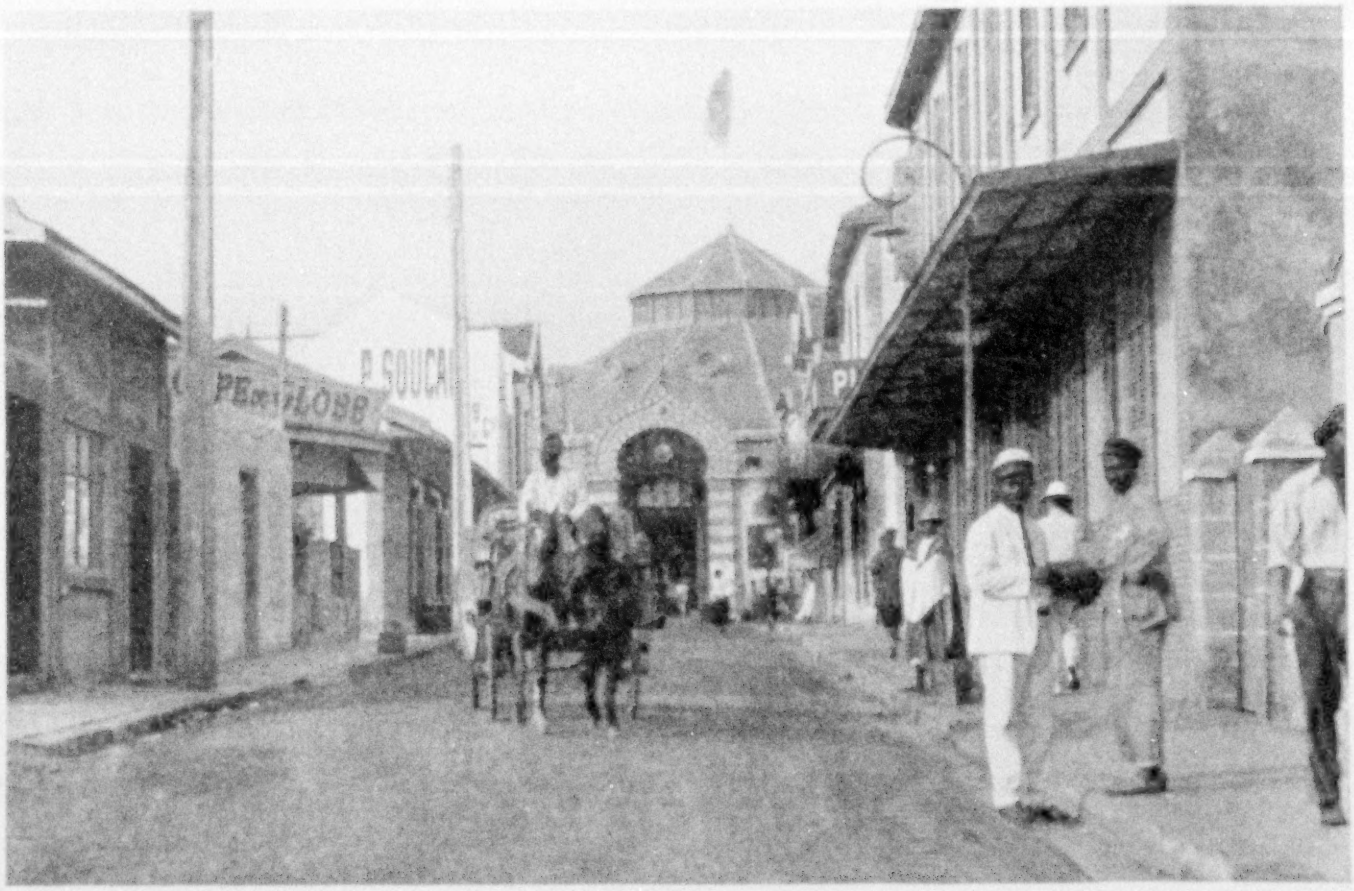
ALONG THIS LONELY COAST OF NORTHWEST AFRICA, CENTURIES OF DARING EXPLORERS HAVE MADE THEIR PERILOUS WAY

Seeking a sea path to India, lured by legends of glittering kingdoms of astounding wealth, early Portuguese and Spanish navigators ventured past this hostile shore—around the vast, dark continent of wild men and wild animals—in their bold quest for India. Old Rabat, on the Morocco coast.

© Compagnie Aérienne Française

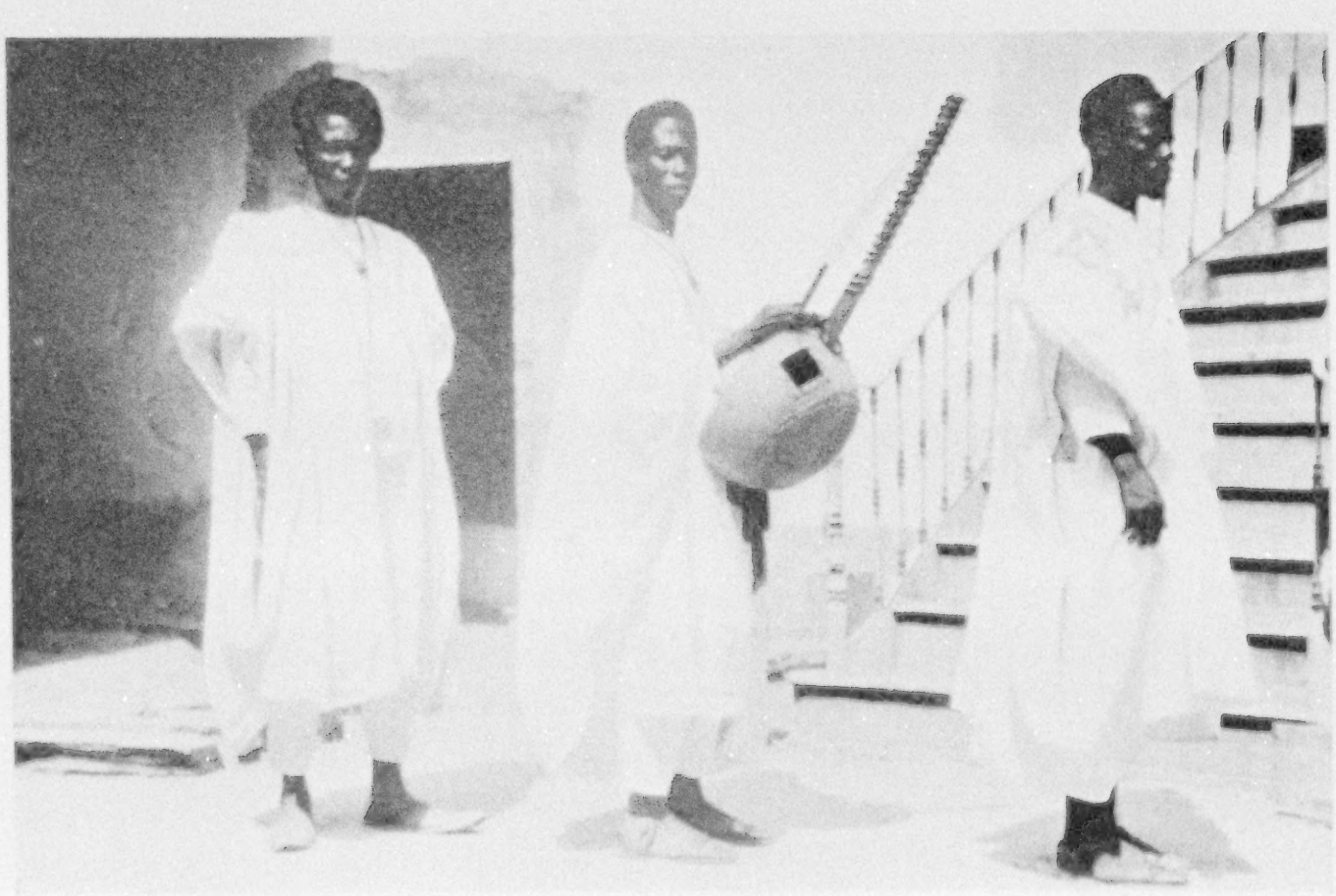
MOATS FAIL AND WALLED CITIES YIELD THEIR SECRETS, NOW THAT MEN FLY

Like most Moorish coast towns of the Middle Ages, once this walled village of Fedala, now almost abandoned, was the haunt of robber bands. No one knows who built it or when. Some think it the Dyos of the geographer Ptolemy.



Photograph by George Finlay Simmons

FROM DAKAR, SENEGAL SEAPORT OF FRENCH WEST AFRICA, DE PINEDO HOPPED OFF ON HIS TRANSATLANTIC FLIGHT TO BRAZIL



Photograph from Comdr. Francesco de Pinedo

LIKE A STEWPAN WITH A HOLE IN IT; BUT IT SOOTHES THE SAVAGE BREAST IN BOLAMA

Portugal gained her West African Guinea colony centuries ago, yet most of the Guinea blacks, notably the inland dwellers, cling to pagan faiths and their customs are those of Gama's day. It was from Bolama that Commander de Pinedo had intended to begin a nonstop transatlantic flight, but the harbor was not sufficiently large to enable his seaplane to take off when loaded to capacity with fuel; so he returned to Dakar and flew thence to the Cape Verde group.

stay aboard, and it took the three of us to throw him out. The urge of adventure in the human breast surely knows no hue, creed, or birth.

OUT OVER THE ATLANTIC THE SEAPLANE STARTS ITS LONELY WAY

As I say, to jump from Bolama to Brazil had been my first plan, but my loaded plane was so heavy and local conditions for a take-off so adverse that I went back up coast to Dakar and started from there. Even then I couldn't get into the air with enough fuel to make Brazil; so we headed for Porto Praia, in the Cape Verde group.

On this, our first bold plunge straight out into the Atlantic, I climbed very high, to try out our instruments. They worked well. Del Prete took observations and watched gas consumption from the different tanks, to keep the plane well balanced.

Photograph by Vitale Zacchetti

DE PINEDO, MARCO POLO OF THE AIR

The intrepid skipper of the *Santa Maria*, photographed during the transatlantic flight by one of his two companions. In the background is the seaplane's navigator, Carlo del Prete.

In good time we made the Cape Verde Islands, but because of winds and rough water it was a nerve-racking ordeal to get started again. I found another flyer there with a seaplane He had been waiting three months for a good day to hop off.

After many vain attempts, we finally got into the air about 1 o'clock one morning and headed for Fernando Noronha Island, 1,450 miles to the southwest.

The good old trade wind, blowing just the way we were going, carried us like a boat on its friendly stream. I dropped a smoke bomb and by sighting back at the Porto Praia lighthouse checked any drift from our course.

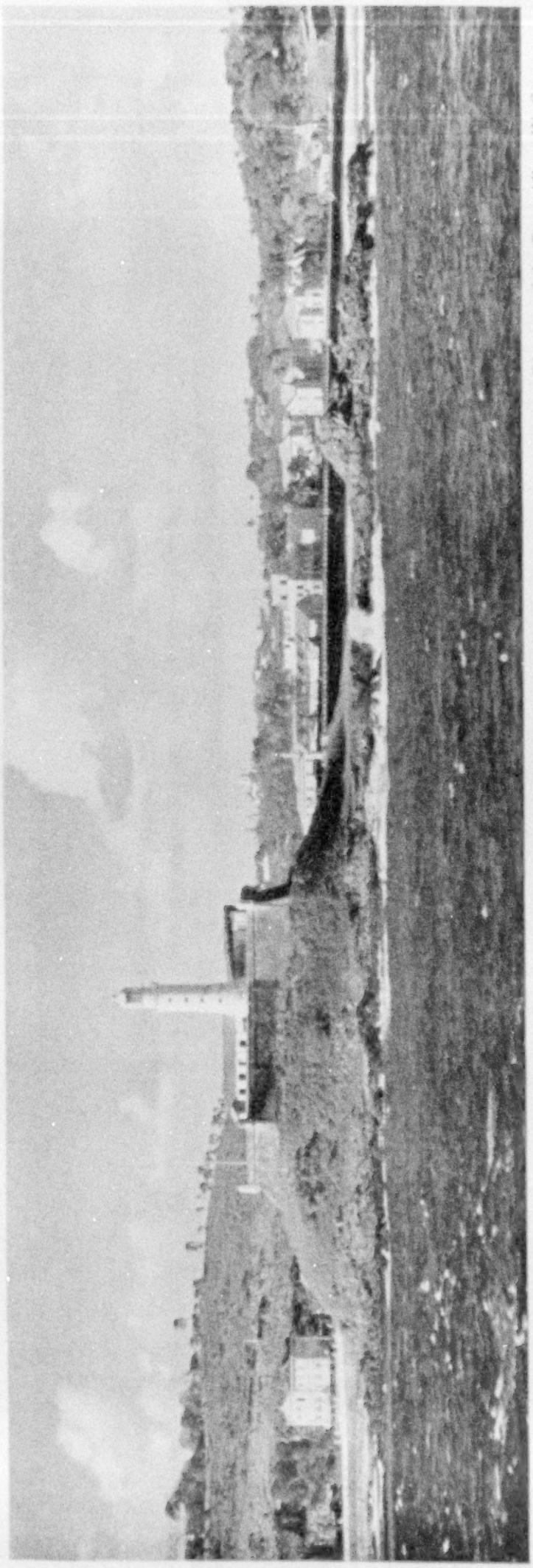
From far away on our left the lights of a ship winked at us.

Toward morning the moon peeped through clouds. Del Prete promptly "shot" her with his sextant. We were on our course.

Dawn revealed a rough sea rolling 2,000 feet below and two ships in sight. I circled low over them, but saw nobody on deck.

TROPIC TEMPERATURES OFTEN AFFECT A PLANE'S DRIVING POWER

Hours later, nearing the Equator, we plunged into tropical storms. Rain was so amazingly heavy that we seemed to be



Photograph by Capt. Albert W. Stevens

BAHIA LIGHTHOUSE, ON THE BRAZILIAN COAST AIR LINE NORTH OF RIO

Lighthouse builders little dreamed how soon these beacons would guide ships that leap from the sea to fly along skylines. To guide night flyers, especially mail planes, big beacons that flash skyward are much used now in the United States and Europe.

literally diving through one continuous big waterfall. I felt anxious as to how our propellers would stand it.

Feeling my way along, not more than 50 yards above the waves, I noted that water in the front engine had suddenly become dangerously hot. In frantic haste, using a sponge, we mopped up all rain water that had fallen in our cockpit and squeezed it in to cool that engine. We even emptied in the precious mineral water brought for drinking. Somehow we cooled off our engine.

Repeated quick, black squalls tossed us alarmingly. Sometimes I could fly around a storm center or dodge under the most threatening of the tumbling clouds.

FLIRTING WITH A WATERSPOUT—AND DEATH

As we shot headlong from one such cloud mass, my heart fairly ceased to beat; for there, tying angry heaven to storm-vexed sea, raged a twisting waterspout full fifteen hundred feet high. In form, color, and size it was like a fantastic mushroom from some Brobdingnagian nightmare world, or a Kansas cyclone at sea shown in slow movies. Had we hit that, I grimly felt — well, just one more Atlantic flight that failed!

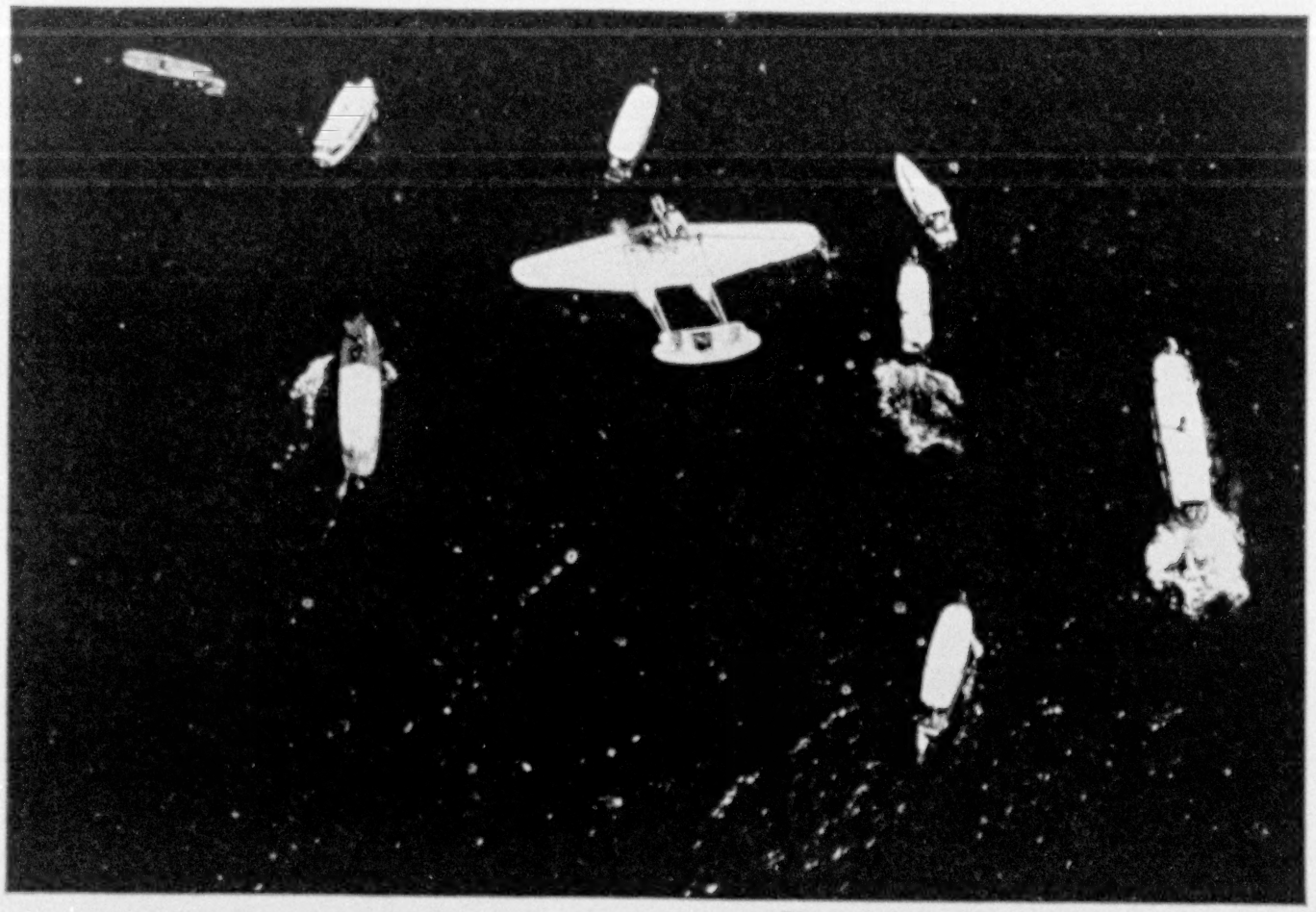
From this howling, twisting pack of cloud wolves we finally escaped almost as suddenly as we had run into it.

Far ahead trailed three steamers, holding the same course we were. They, too, must be bound for Fernando Noronha, so we were still flying straight.

Photograph by Capt. Albert W. Stevens

AN AËRIAL VIEW SHOWING RIO DE JANEIRO'S AVENIDA RIO BRANCO, CUT THROUGH THE HEART OF THE CITY

To relieve congestion of traffic, to provide better ventilation and relief from heat, and to improve the appearance of the second largest city in South America, the Brazilians spared no expense or labor (see, also, text, page 267).



Photograph from Comdr. Francesco de Pinedo

LAUNCHES, SEEN FROM ABOVE, GREETING THE "SANTA MARÍA" AS SHE ARRIVED IN THE BAY OF RIO DE JANEIRO

Taking the sun, we figured we had made 100 miles an hour and our goal must be near.

"LAND! LAND!"

Like the lookout on the *Santa María* of long ago, I wearily scanned the wide horizon ahead. No land birds flew by, no bits of carved wood floated past, as cheered my countrymen in 1492. And then—"Noronha! Noronha!" I shouted and signaled my crew. With grateful hearts and all fatigue forgotten, we gazed and gesticulated as may have the Children of Israel when they sighted the Promised Land.

And there, awaiting, lay the Brazilian cruiser *Barroso*, kindly sent to us as a tender.

We should have alighted; but, checking our gas as we circled over the cruiser, I felt we had enough fuel to make for Natal, on the mainland; so we pushed on.

Usually, in the Fernando Noronha zone, winds blow from the southeast, as is the habit of Atlantic trade winds below the Equator; but some big barometric disturbance had occurred, and the farther we flew the worse the wind got. We bucked over rising seas till in dismay we saw our gas was fast running low.

To avoid a forced descent among heaving rollers, we had to turn back. Del Prete and Zacchetti pumped desperately to get every remaining quart of gas.

Now the *Barroso*, having lifted her mudhook to follow us, was already a mile at sea from San Antonio Bay.

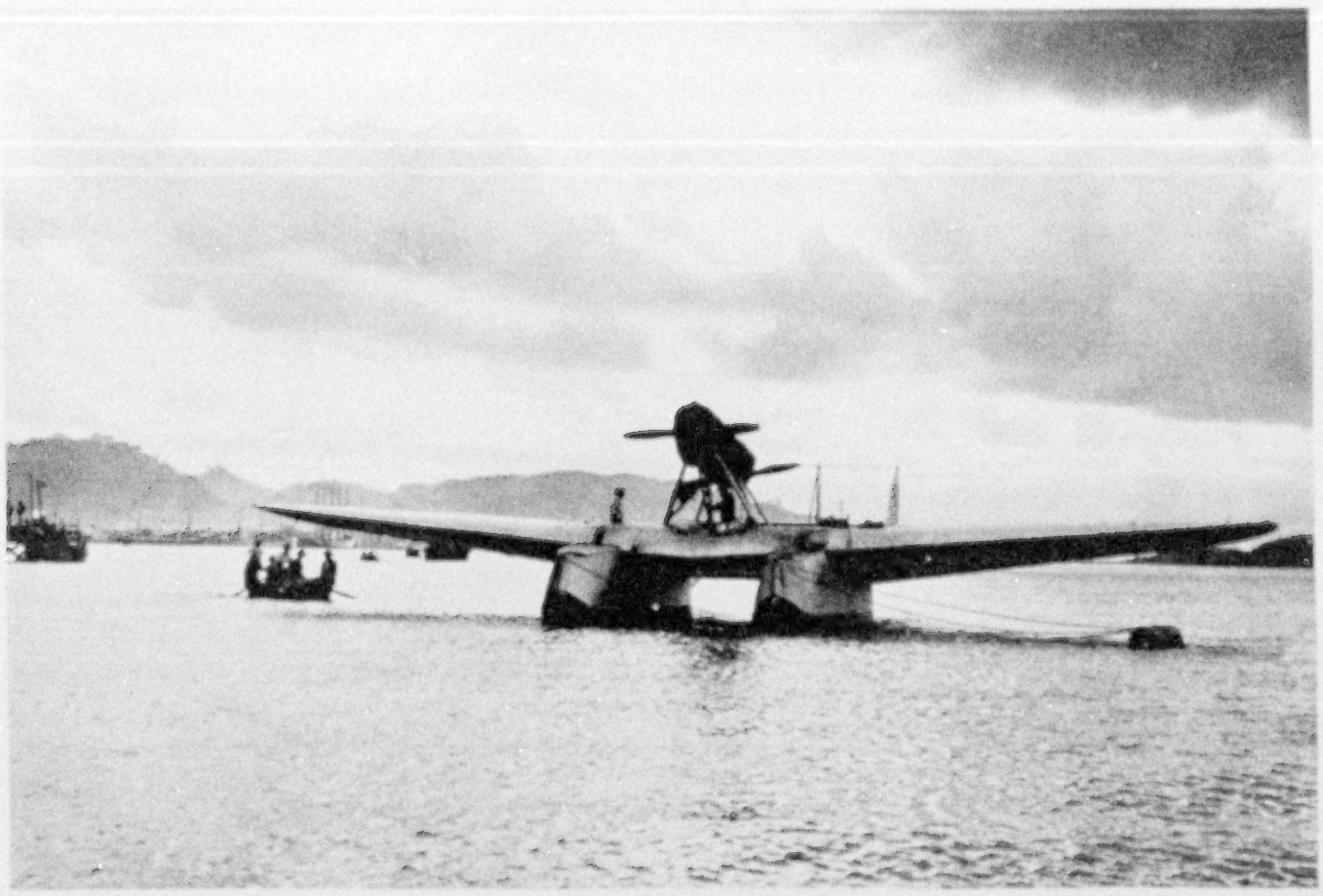
With "a bone in her teeth," she poked her steel nose into the big head seas. With our gas about gone, we barely reached her and squatted in her wake, where she had somewhat cut the big rollers in two. But the waves were still too high and rough for her lifeboats to reach us.

Finally, we drifted perilously close and caught a line.

Then, as the cruiser swung about, to anchor, we floated into new danger—almost under her stern.

A CRITICAL MOMENT FOR THE "SANTA MARÍA"

Waves slammed our helpless plane hard against the big ship, smashing an aileron and breaking the trailing edge of our right



Photograph from Comdr. Francesco de Pinedo

THE "SANTA MARÍA" AT SANTOS, BRAZIL

In future air traffic between cities situated on rivers and by the sea, seaplanes may carry most of the trade. Wheeled planes, to rise or alight safely, need specially made fields. But, barring high waves, a seaplane may use almost any open water as its field.

wing in several places. After some hard, wet work we finally made our "bus" safe for the night.

Despite our crippled condition, we hoped we might yet be able to fly. But getting gas from the cruiser in the rough sea still running next morning was a tight-rope walker's task. Hand over hand we hauled each can down a long cable.

Lusty cheers came from friendly sailors as, after completing refueling operations, we "gave the gun" to our big goose and she cleared the sea. She had lost some tail and wing feathers, so to speak, but she was still able to fly.

In three hours we made Natal. Bad luck was forgotten. Another *Santa María* had found the New World.

Natives rushed out to meet us when we landed, even as the first Americans greeted Columbus; but nobody mistook us for gods or offered us gifts. We were just three tired flyers, badly in need of baths. It was really our battered seaplane which people wanted to see and touch.

Down the coast to Pernambuco, to Bahia and beyond, seaplane travel is made easy and safe by many bays and estuaries.

Nearing Rio de Janeiro, I drew hot water from my radiator, got out my kit, and shaved. The wind blew the lather off and my nickel-plated mirror had been blurred by rainstorms. But I wanted to look my best for Rio. There she lay, fragrant and colorful, voluptuously reclining beside the sea. Back of her rose green, wooded slopes and stony pinnacles that scratched the clouds.

RIO FROM THE SKY—AN ASTONISHING PANORAMA

Astonishing panorama, this picture of Rio from the sky. Among all the world's great cities, Nature has been most kind to Naples, Sydney, San Francisco, and Rio. Her exclusive features, of course, are the astounding rock giants, which rise in and around her harbor like cubist settings for a big outdoor stage (page 265).

Rio lives riotously, crazily on carnival nights. She made life happy for us. Always, even as old men mumbling of the

long ago, we shall remember Rio.* Girls there have such big, laughing eyes.

But Rio knows her Brazil nuts, too, her big world trade, and the amazing latent wealth that is the Amazon's. Here I obtained maps and such data as I could for our coming attempt to fly the Matto Grosso.

So up in the air again. But it hadn't been easy to leave Rio. With what sighs and wistful thoughts we looked back at her, lying invitingly by the blue sea.

I am an Italian. And there are others. But I didn't dream how many others till I got to Buenos Aires. What a welcome! Even a *Te Deum* for us in the Cathedral. This huge movement of Italians to Argentina and its effect on farm and industrial life in that newly rich, growing country afford an immigration phenomenon of our century.

Flying men in Buenos Aires, scientists, and a few adventurous souls eagerly heard our plans to fly the Matto Grosso, to attempt a seaplane trip through the mysterious heart of inner Brazil.

But to the average business man, and to what you Americans call innocent bystanders, we were just a trio of mad Italians off on a wild, improbable quest.

RIVERS FORM A NATURAL SEAPLANE PATH INTO THE HEART OF SOUTH AMERICA

Looking down from our departing plane on all the fine, big houses, on the busy ships and freight trains, on the vast grain fields and cattle herds that make Argentinians rich, we could see why they had no urge to explore jungles with airplanes; yet inevitably air commerce will loom large in the economic destiny of Argentina.

Up the Paraná River, then up its fork, the Paraguay, and we came in two days to Asunción. We landed among boats on the river and went ashore, where a great crowd cheered us.

Backed by his squad, the gaudily uniformed chief of police struggled to make a path for us through the pressing mass of people. In fact, the valiant chief fought so hard that he perspired through his dress coat and through four shirts worn under it!

Once the chief gave vent to frightful oaths in the Latvian language! (Don't ask me how I knew.)

"You're no Latin American; you're a Lett," I exclaimed.

"Once, but now I'm a Paraguayan."

"How?"

"Oh, life's vicissitudes. I was a sailor, a machinist, then an aviator, then a chauffeur. I lost my job and nearly starved in Buenos Aires. Now I'm here, chief of mounted police."

FAR UP THE PARAGUAY TRADE PUSHES ITS STUBBORN WAY

Fascinating as life is here, with much survival of a romantic Spanish-colonial social caste system that dates back to viceroy days, we had to keep on flying. To me the most unsatisfactory phase of my whole world cruise was this eternal necessity for haste. At Asunción, for example, or far up the dwindling river, at Corumba, on the Bolivian frontier, how interesting to have stopped for long talks with observant dwellers in those far places.

Corumba, as far upstream from Buenos Aires as New York is distant from Kansas City, is Brazil's most important inland city. Troops are kept here and small river gunboats. Cattle ranches cover the country roundabout, and through Corumba goes a stream of trade with the vast, only partially explored Brazilian inland State of Matto Grosso.

"Big woods," these words Matto Grosso mean.

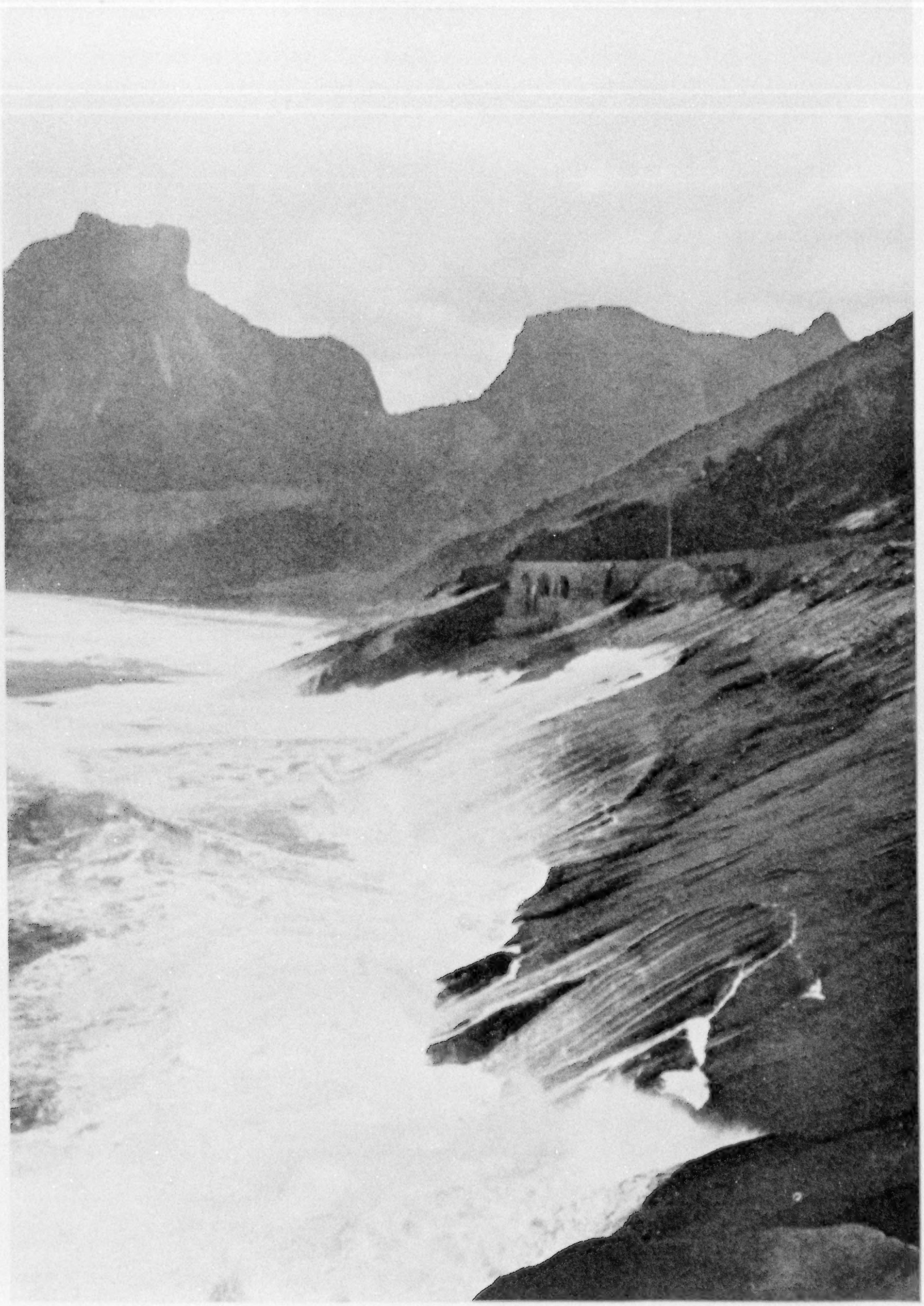
Flying beyond Corumba, we twisted sharply with the bending, ever-narrowing stream. A changing country now, a bit wilder and emptier of human life, as we headed for São Luis de Caceres.

Suddenly, high up in the sky far ahead, I saw white wings shining. "What!" I said to myself incredulously. "Airplanes away up here?"

Circling about in perfect spirals, slowly descending, the mysterious flyers indeed looked like planes; but, approaching closer, I saw they were prodigious birds, great South American condors. Now I maneuvered hastily to avoid them. A crash into our propeller by one of these feathered giants might have ended us.

The big birds themselves seemed not at all alarmed by our roaring plane. Some

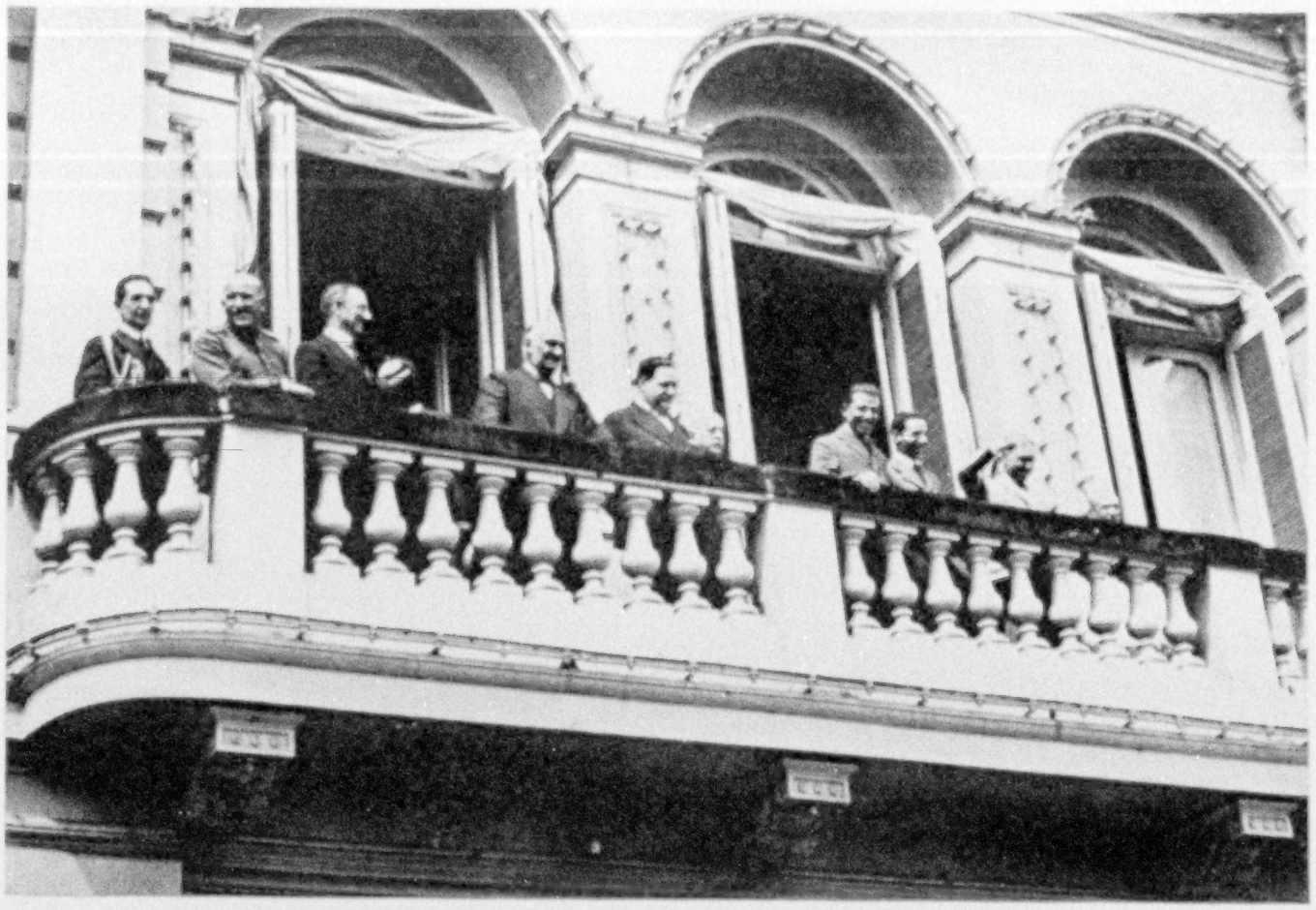
* See, also, "Rio de Janeiro, in the Land of Lure," by Harriet Chalmers Adams, in the NATIONAL GEOGRAPHIC MAGAZINE for September, 1920.



Photograph by Leslie G. Saunders

A BAD PLACE FOR SEAPLANE MOTORS TO STOP, ON A ROCKY BIT OF BRAZILIAN COAST

In future air trade between the Americas, the most popular seaplane path will probably be over the Antilles to Venezuela; thence down the east coast of South America, over lagoons, estuaries, and river deltas. Below the coastal plains, however, parts of Brazil's shoreline are rough and rocky.



Photograph from Comdr. Francesco de Pinedo

PRESIDENT DE ALVEAR WITH COMMANDER DE PINEDO ON THE RED HOUSE BALCONY AT BUENOS AIRES

A *Te Deum* was sung in the cathedral at Buenos Aires when the flyers arrived safely. The Red House in the Argentine capital corresponds to the White House in Washington. Because of heavy migration from Italy to Argentina, social and cultural ties are close between the two countries (see, also, text, page 268).

circled indifferently within a few yards of us. One had lost patches of feathers. Its bare thighs were big, fat and dimpled, like a baby's (see page 274).

FLYING OVER THE WORLD'S GREATEST FOREST

When within some 60 miles of São Luis de Caceres, we got our first superb vision of the infinite green forest ocean, the incomparable Matto Grosso. As far as we could see now, there stretched a dark, thick, greenish mass of vegetation. It soon got so thick that only at occasional intervals could I see the river. So I had to use my compass, steering alone by it over what now looked like a whole world covered with jungle.

My calculations showed we should now be not more than five miles from the town of Caceres.

But only with difficulty, circling over silvery bits of river, discernible through the dense tree growth, did I finally spot some small houses.

Down we came on the river.

"We'll never get out of here," said Del Prete, in alarm. I took one look around and my heart sank. Into a veritable tree-lined pocket we had dropped. The river offered no straight stretch, free of overhanging trees, long enough for a take-off.

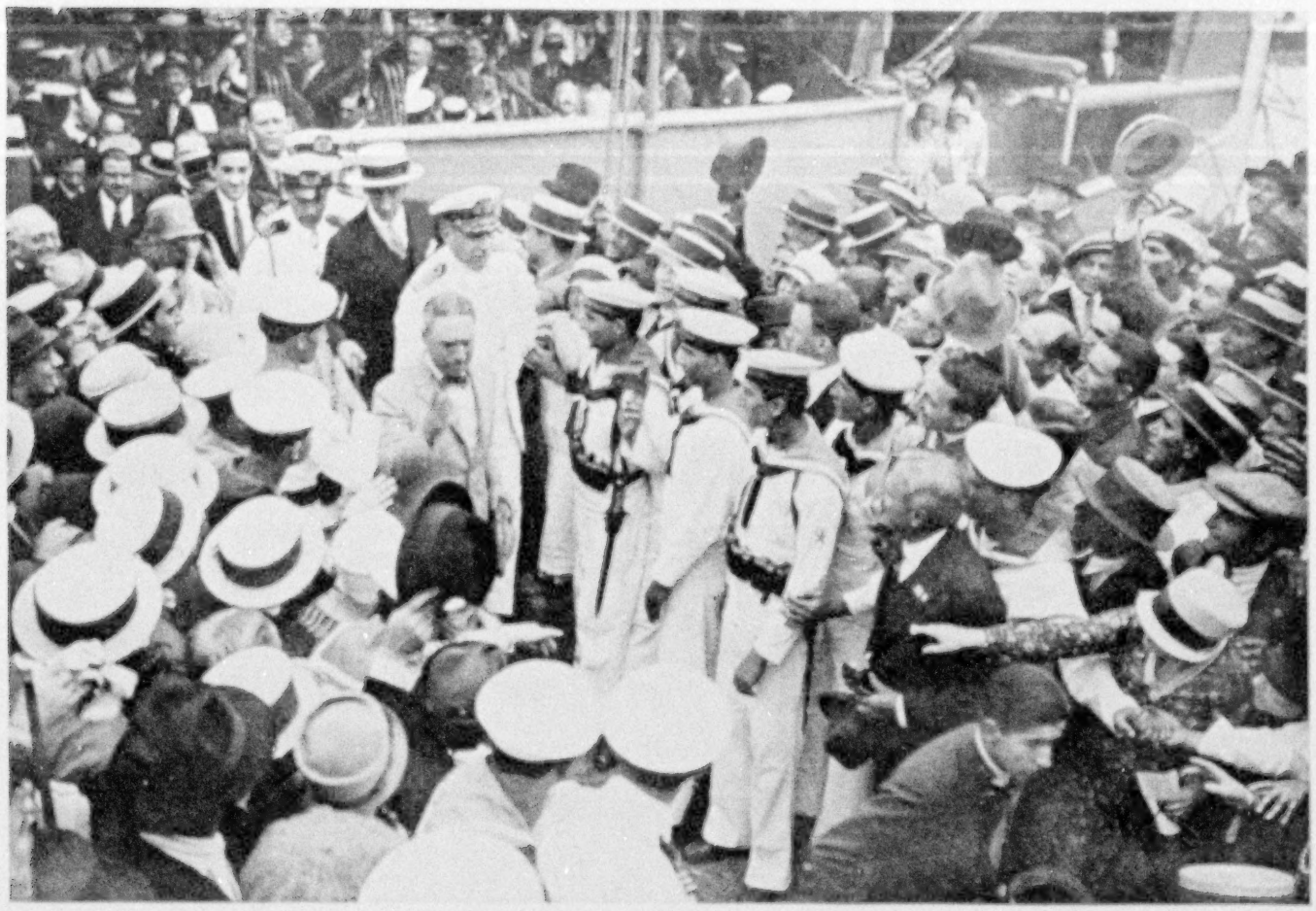
Towed by a tiny motor boat, we edged up to the town of São Luis de Caceres. Its whole population crowded the river bank to stare in wonder at their first seaplane.

I told our plight to the captain of a small river gunboat that had poked its nose thus far up the winding stream.

"I can tow you somewhere, till we find enough open water," said he. And he did. But what a quest—for three long, hot, bug-biting days (see page 275).

Brazilians say the Matto Grosso is the world's biggest forest. I believe it.

Through this eternal green jungle, damp and emitting strange odors hinting at rotting wood, mud, odd fruits, and plants new to us, we wound our way on



Photograph from Comdr. Francesco de Pinedo

SAILORS HOLD BACK THE CHEERING CROWDS AS THE ITALIAN FLYERS COME ASHORE AT BUENOS AIRES

A woman in the right foreground reaches over the guard's arm to touch De Pinedo as he passes.

the river. It formed absolutely the only path we saw.

The fight for life, among the endless different plants and trees crowding one against the other, and all reaching up for light and sun, was amazing.

Here and there one giant tree, stronger than others, thrust its big arms above the forest ocean about it. Seizing this chance to reach the sun, tangles of vines and parasites climbed up with the tree's rising top, till the whole formed a great green dome (see pages 277, 283).

AT DUSK THE JUNGLE IS ALIVE WITH SOUNDS—AND BUGS

Down below, more bushes, vines, and weeds were laced and intertwined in a mass so thick that no man could go through without slashing a space for every step and enduring the cuts, stings, and whips of thorny plants.

On the ground colossal trees lay rotting, with a new generation finding root in their decayed trunks.

Calls came often from unseen birds, and toward nightfall the grunts and squeals of wild things, hunting their evening food. Jaguars were there in plenty, I was told.

But what worried us was bugs. Not harmless lightning bugs, nor nice, friendly ladybugs, but biting bugs that gave off foul odors, that flew into our eyes and tried to crawl with their sharp, scratchy feet into our ears and noses.

On the deck of the little boat that night insects were so thick, especially mosquitoes, that while one man ate with bugs crawling on his bread, another sprayed him with kerosene from a hand pump, combating the insect army.

All that day and the next our quest kept up and the bugs bit. "I'll swim," I said; "cool off and fool the bugs a bit."

Just as I was pulling off my oil-spattered trousers an alligator stuck up his evil snout in the very spot I had picked to dive in. Somebody shot him; I put on my trousers.

"But it's not alligators that kill swimmers here," I was told. "It's that voracious little fish you see swimming there, in that school. His teeth are like a wolf's. If you but put your hand in the water he

URUGUAYAN GENERALS AND ADMIRALS OF TO-MORROW AT PLAY IN MONTEVIDEO

may grab it, and it's hard to shake him off" (see page 282).

Praise Allah, we came at last to an open stretch, and in an early dawn we took the air. Del Prete's last move in that bug-ridden spot was to pull off a pair of surgeon's rubber gloves in which he had munched breakfast to save his hands from stings and bites.

HOW A COURSE OVER THE MATTO GROSSO WAS DETERMINED

Three considerations moved me in the choice of my inland route up the South American Continent.

First: the maps and other useful data at hand.

Second: rivers and lakes, more or less in line and close enough together so that I could fly my seaplane from one to another.

Third: the possibility of sending oil and gas ahead to stopping places.

This was the route from Buenos Aires to Pará: up the Rio Plata, the Paraná, and the Paraguay; thence overland, over the Matto Grosso, to the headwaters of the Rio Guaporé, which forms part of the boundary between Brazil and Bolivia; thence over to the Rio Mamoré, in Bolivia; thence to the Rio Madeira, leaving it above its mouth for a final land hop to Manáos, on the Amazon.

From São Luis de Caceres, along the route, over which no air craft had ever flown before, we now steered our fire-spitting iron goose.

My next fuel supply was supposed to

URUGUAYAN YOUTHS AT A RECREATION CENTER IN MONTEVIDEO

Swift growth in the popularity of baseball, boxing, tennis, and other athletic sports is an outstanding social phenomenon of Latin American life in recent years.

be waiting at the junction of the Rio Guaporé and a small stream. My agents had already shipped gasoline and oil from Corumba to that point. But I didn't dare depend on this. All we knew was that natives had started with the supplies.

To have a bigger margin of safety on this, the most dangerous leg of our flight over this strange land, I also had gas sent to São Luis de Caceres. We took this aboard.

STEERING BY COMPASS OVER AN OCEAN OF TREES

We aimed now for the small town called Matto Grosso, on the Rio Guaporé. In perfect rhythm our big engines hummed. Pride warmed our souls. We were flying over a land no human eye ever before had seen from the sky.

But clouds soon hid the earth. We rode on top of them, in dazzling morning sunshine, on a field white as snow.

I watched my compass carefully, so as not to miss my landmark, the almost deserted village of Matto Grosso.

In time hilltops stuck through the cloud-field ahead and my calculations showed we should be nearing the River Guaporé.

Feeling our way carefully through cloud holes, we saw a stream and a few houses with red roofs. It was Matto Grosso. To give its people their first glimpse of a flying machine, I circled low.

Then we headed downstream. Again I had to watch the compass, for clouds often hid the river. To our left rose the mighty mountains of the Bolivian highlands. They were of a gray color, and now and then we saw the white thread of waterfalls.

Gravely anxious not to lose contact with the river, the salvation of flying boats with engine trouble, I risked an attempt to descend under the clouds. Treetops, jumping suddenly into view, sent us, growling, up again. I barely missed a crash.

A little later I tried it again. The sun, now getting higher, helped us a bit by causing the clouds to float upward.

Again, stretching into infinite miles, we beheld the vast, incomparable forests.

Photograph by Charles Martin

A RIVAL NAVIGATOR OF THE ANDEAN SKIES

The great condor of the Andes sometimes has a wing spread of ten feet. His sinister head is bare; about his neck he wears a white ruff, and his body plumage is black. He and his winged kinsmen are dangerous to meet in aërial flight. Commander de Pinedo at first mistook these huge birds for airplanes (see page 268).

Here and there, from the undulating ocean of green, big, bare, white limbs of dead trees stuck up like the bones of prehistoric monsters.

NATURE ASSUMES STRANGE ASPECTS

Sometimes, like a tent, clouds closed over us. Then we rode between the gray above and the green ocean below. It was a strange, solemn aspect of moody Nature.

Once, on the river bank, we glimpsed grass huts and naked people reddish in color gazing up at us.

Finally, we came to the river junction, where our emergency supply of fuel was supposed to be awaiting us. Not a sign of it! Luckily, we still had gas.

The next fuel supply would be at Guajara Mirim, about 360 miles away. Could we make it?

We trusted in our luck and urged the big goose. Nine hours after we had crawled up from that bug-infested hole in the Brazilian jungle we sighted our goal. It was 3 p. m. when we circled over Guajara Mirim.

RAILROAD TIES IMPORTED TO WORLD'S GREATEST FOREST

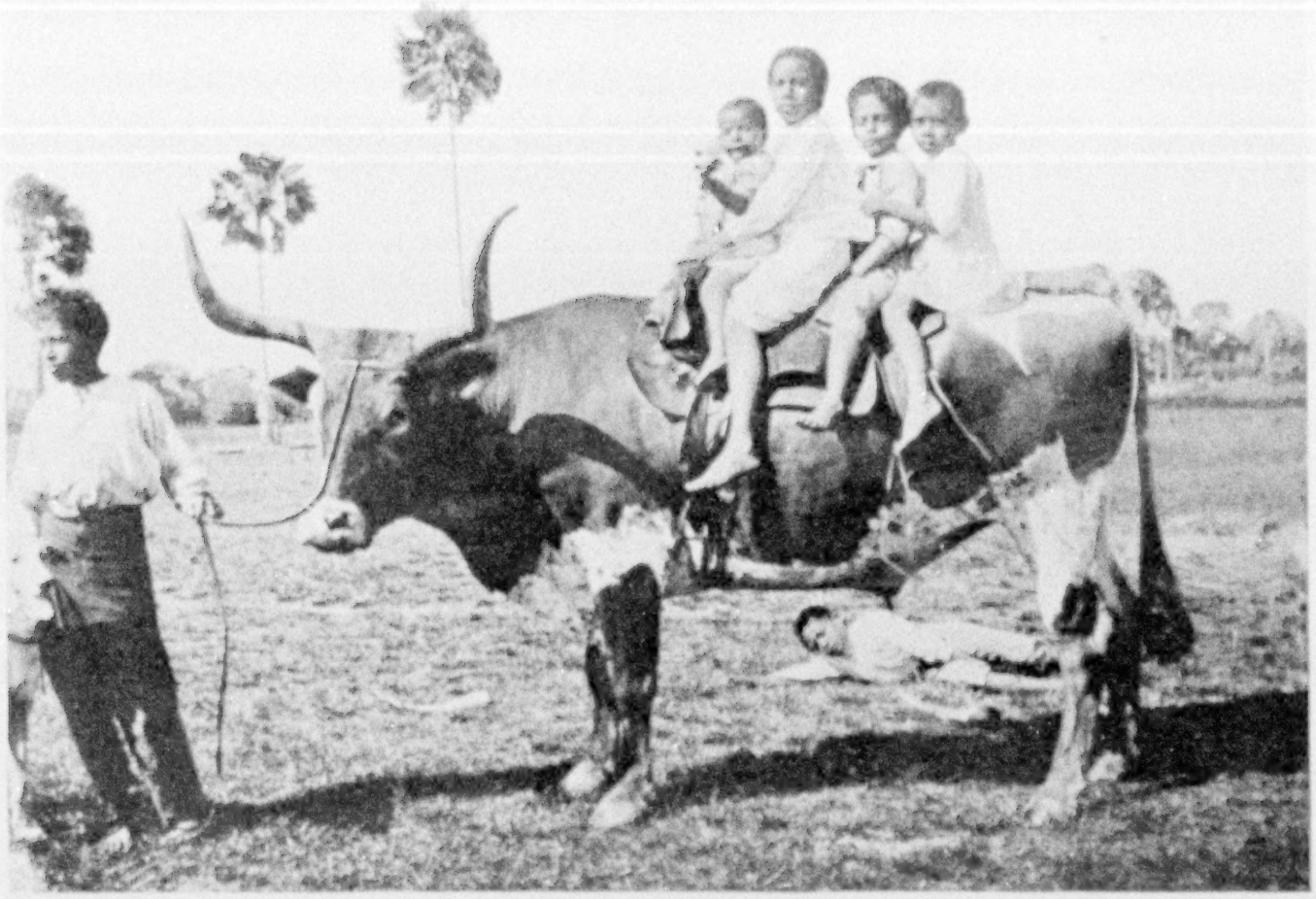
Dangerous rapids broke near the town, I had heard; so we felt our way down carefully, squatting a mile from town in shallow water, behind a sheltering island. Luckily, my anchor bit hard into the river bottom.

We refueled, doctored our bug bites, ate, and slept.

Always the forest, endless, everlasting, challenging — "the Green Hell," the natives call it.

Tucked away in this far nook of the world is a toy railway. It runs from Guajara Mirim, on the Rio Mamoré, down to Porto Velho, on the Rio Madeira. It was built to haul people and goods around impassable rapids in the rivers.

A curious tale was told me. Although this railroad runs near the world's greatest forest, ties to build it were shipped all the way from Australia! Costly ties, yes. But shipping in a sawmill and trying to keep men at work in that fever-burnt



ON A MATTO GROSSO FARM IN BRAZIL

Photographs from Comdr. Francesco de Pinedo

HUNTING OPEN WATER ON THE UPPER PARAGUAY FROM WHICH TO HOP OFF

To get gas, the seaplane had to alight at São Luis de Caceres, on the upper Paraguay, where the stream was narrow and trees high. A friendly boat towed the trapped seaplane to find a spot where it might rise and clear the jungle (see, also, text, page 270).

Photograph by Dr. Arthur H. Fisher

BRAZIL GROWS SNAKES THREE TIMES THE SIZE OF THIS ONE

Semiaquatic, hunting at night, the largest of the South American boas or anacondas probably attain a length of 30 feet. The biggest boa ever caught, and authentically measured, was 26 feet long. The Philadelphia Zoo has a specimen 24 feet long. This German wild animal dealer at Pará, Brazil, is holding up a 9-foot reptile.

land would have cost a lot more. Laying the track, short as it is, took frightful toll. Fever claimed a human life for every rail put down, it was said.

We spent the night in Guajara Mirim, and I was taken to the town "theater," a small, stuffy barrack room of wood, hot and humid, with hungry mosquitoes feeding greedily on the entrapped audience. The moving picture shown was old and worn. Often it broke. I went sound asleep several times. Then I got a singular surprise. There on the film, an actor in the motion-picture play, I recognized an old schoolmate I had not seen for years. I knew the cinemas had claimed him, but how astonishing to see his face away off here, on the banks of a jungle river in Brazil!

The village postmaster gave us a bag of mail, as we were departing downstream next morning, and asked me to throw it overboard as we flew above a certain town on our route.

Photograph by Capt. Albert W. Stevens

AN AMAZON VALLEY FOREST FROM THE AIR

Down the Rio Branco, in Brazil, cattle are shipped to the market at Manáos; but the Caracarahy Rapids are impassable; so cattle are put ashore and driven over the 16-mile forest trail shown here to other boats below.

Photograph by Capt. Albert W. Stevens

THE GOVERNOR'S PALACE AT MANÁOS, IN THE BRAZILIAN STATE OF AMAZONAS

Heat, poor food and polluted water, poisonous insects and snakes, isolation or the society of savages—all these evils civilized man defies when they stand between him and the things he wants; so, nearly 1,000 miles up the Amazon, he builds Manáos, to whose floating docks come goods from overseas in exchange for crude tropical products needed in Europe and the United States.

"It's heavy," I said. "If I throw it and hit somebody on the head, it might kill him."

"What a great honor that would be," sighed the postmaster. Later, over the town, I dropped the heavy bag, but I never heard whether we "honored" anybody by killing him with it.

OVER THE GREEN HELL AT LAST

Storms forced us down on the way to Manáos. We alighted on the river and drifted squarely into an Indian village that sprawled along its banks. We kept on drifting. Though regular steamers pass these Indian hamlets, no white is ever quite safe with them.

Below the Indian town, the storm blowing over, we got on our wings again. The Madeira River grew wider and the forests less dense as we neared the Amazon country.

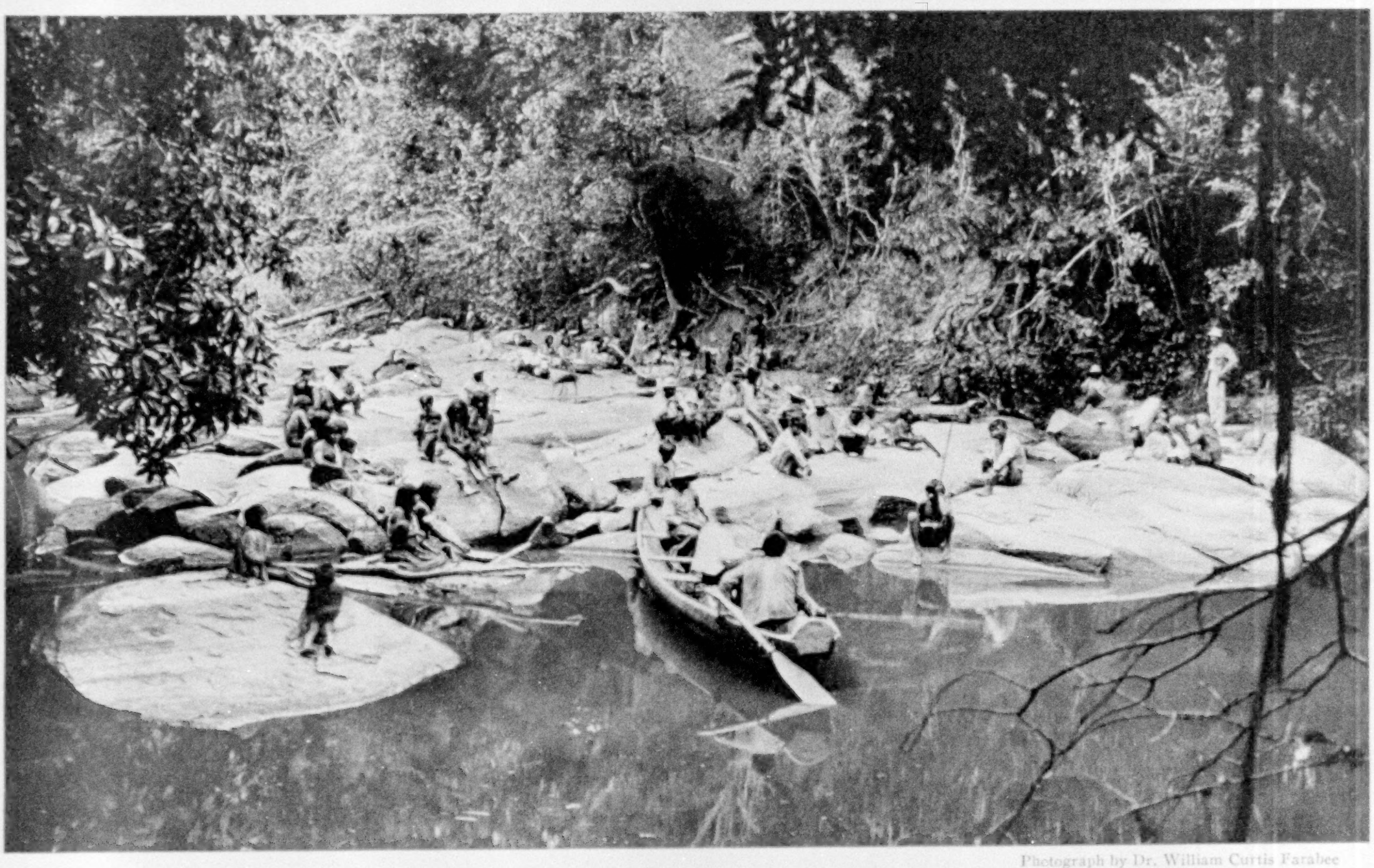
Taking a chance, I quit the Madeira River and turned northwest. A lucky cross-country flight brought us at last to Manáos and the mighty Amazon.

My heart sang in triumph. We had conquered "the Green Hell."

Photograph from Dr. W. L. Schurz

THE GREAT GREEN HELL, OR VAST BRAZILIAN FOREST, IS NOT WITHOUT ITS BEAUTY SPOTS

An open grove of *assai* palms on the Madeira River, down which the *Santa Maria* flew, finishing the first air voyage ever made over the Matto Grosso, or Great Woods of Brazil. This mighty river, with a rise and fall of fifty feet, is almost as great in volume as the Amazon at their confluence (see text, page 281).



Photograph by Dr. William Curtis Farabee

AN EXPLORING PARTY IN BRAZIL HALTS BESIDE A JUNGLE STREAM

Tangled, dense, and trackless as it is, usually a white man's only way through the jungle is by water. More than 30,000 miles of streams are navigable in the Amazon Valley. The author, first to fly over Matto Grosso, says the forest was so thick that he could imagine himself sailing over a rolling ocean, its green waves formed by leafy tree tops and climbing vines (see, also, text, page 270).

Manáos is the child of jungle rivers. Though it is about as far from the sea as Chicago is from New York, ships from all over the world tie up at its floating wharves. They have to float, as do also its bridges, for the Rio Negro, on whose banks Manáos stands—12 miles from where the Negro joins the Amazon—rises and falls as much as 33 feet.

But my curiosity was aroused more by the number of enormous, half-finished palaces than by the strange floating bridges. Crumbling now, though never completed, they contrast strangely with the spick-and-span aspect of present-day Manáos.*

"They're monuments to the rubber boom," I was told. "Years ago the whole world went crazy over Brazilian rubber. Manáos spawned millionaires overnight. In their madness they started these castles in the air, but the boom broke before they were finished."

Friendly souls took me to the theater, though, having averaged but four hours' sleep a night for weeks, I was dog tired. In a fine red-plush box seat with gilded rails, I promptly began to snore while a soprano sang from "Madame Butterfly." The Italian consul with me got up and apologized. People applauded him. This awakened me. I got up, said a word or two, and then the good-natured audience let me rest.

Theater-goers here still speak of the tragic fate of an Italian lyric troupe that sang in Manáos about the time of the Spanish-American War. Yellow fever broke out; the director and nearly every actor in the troupe died in the epidemic. Now the Brazilian Government has done much to stamp out this plague.

The Amazon—mighty artery from the Andes to the Atlantic! So wide, it looks like a sea. Named "Amazon" by the early Spanish explorer, Orellana, because Indian women on its banks fought beside their warrior husbands against the Spaniards, like the Amazon fighting women Herodotus tells of.

So variable in flood that Indians in boats during high water pick Brazil nuts from the tops of tallest trees. Astounding in the incalculable number of cubic miles of fresh water drained each season to the sea—rain water that falls on an area of more than 2,722,000 square miles. Even after seeing it I still can't realize its size. How little we know yet of Brazil! That Madeira River we flew down, almost as big as the Amazon where they join, with a rise and fall of 50 feet!

After we quit Manáos, flying down the Amazon was, in a way, disappointing. It was so big, with lakes and tributaries, and we went so fast that we couldn't see it in much detail.

THE AMAZON IS STILL IN THE MAKING

Without a well-worn bed or permanent main course, one may say the Amazon River is still in the making.

That sounds foolish, because our world is so old; and it, of course, isn't true of Amazon headwaters, in upper Peru; but from its sources this giant river, winding back and forth, runs close to 4,000 miles to reach the sea. From the foot of the Andes to its mouth, the fall is slight; so that, with its myriad lakes and large but leisurely feeding streams, it is minus a true, fixed channel.

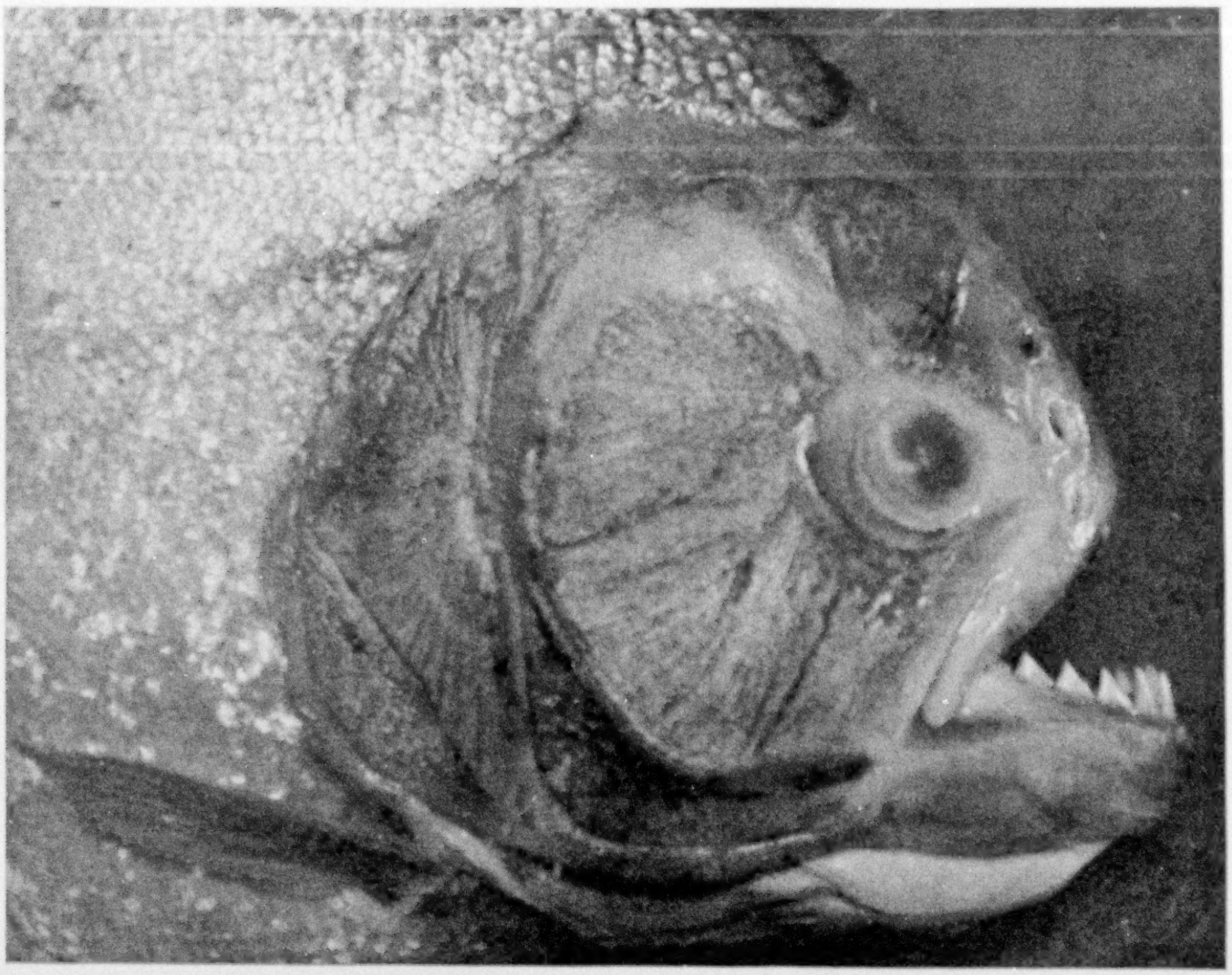
In some stretches the lower Amazon is close to 60 miles wide. Here and there forests along its banks are broken by plains or lakes, dry or full, depending on the season.

The river has been used as an arterial "through highway" by white men since Pinzón saw it. Pizarro, after he had conquered Peru, sent an expedition to this "white sea whose waves rolled over sand of gold and beach of diamonds."

From Quito this force, commanded by his brother Gonzalo and numbering 300 Spaniards and 4,000 Indians, started down the Napo River to the Amazon. Hunger and disease nearly wiped them out. Some survivors, under Francisco Orellana, built a small boat on the Napo and reached the Amazon.

Somewhere near the mouth of a tributary stream his men tried to land on the jungle's edge; but Indians drove them back. It was here that Indian women, fighting alongside Indian braves, led Orellana to call the tribe Amazons, from which came the river's name.

* See, also, "Exploring the Valley of the Amazon in a Hydroplane," by Capt. Albert W. Stevens, in the NATIONAL GEOGRAPHIC MAGAZINE for April, 1926.



Photograph by J. F. Tiedeman

THE EVIL-LOOKING "MAN-EATER" FISH THAT COMMANDER DE PINEDO SAW IN BRAZILIAN STREAMS

"I caught this fish, called a piranha, in a little pond on Marajó Island, near the Amazon's mouth," says the traveler who photographed this specimen. "I used no hook—only a string with a piece of raw meat tied to it. So many fish attacked my bait that in one quick jerk I threw several out of the water; but when I asked a native cook to fry them, he stoutly refused to touch the 'man-killers.'" On Marajó Island cattle that go on hot days to stand in water are often badly bitten by these sharp-toothed fish (see, also, text, page 271).

We saw few Indians from the plane. Long, long ago they suffered so heavily at the hands of early explorers and traders that survivors moved back from the white man's water highway to safer jungle depths. In a wild state now and under only nominal government control, they are often hostile to any exploring whites.

TORRENTIAL AMAZON RAINS DELUGE THE SEAPLANE

Ships we saw in the lower reaches of the river, which, with its major tributaries, comprises a network of navigable streams totaling more than 30,000 miles.

About 10:30 in the morning we flew over the river city of Alemquer. An hour later we passed Monte Alegre.

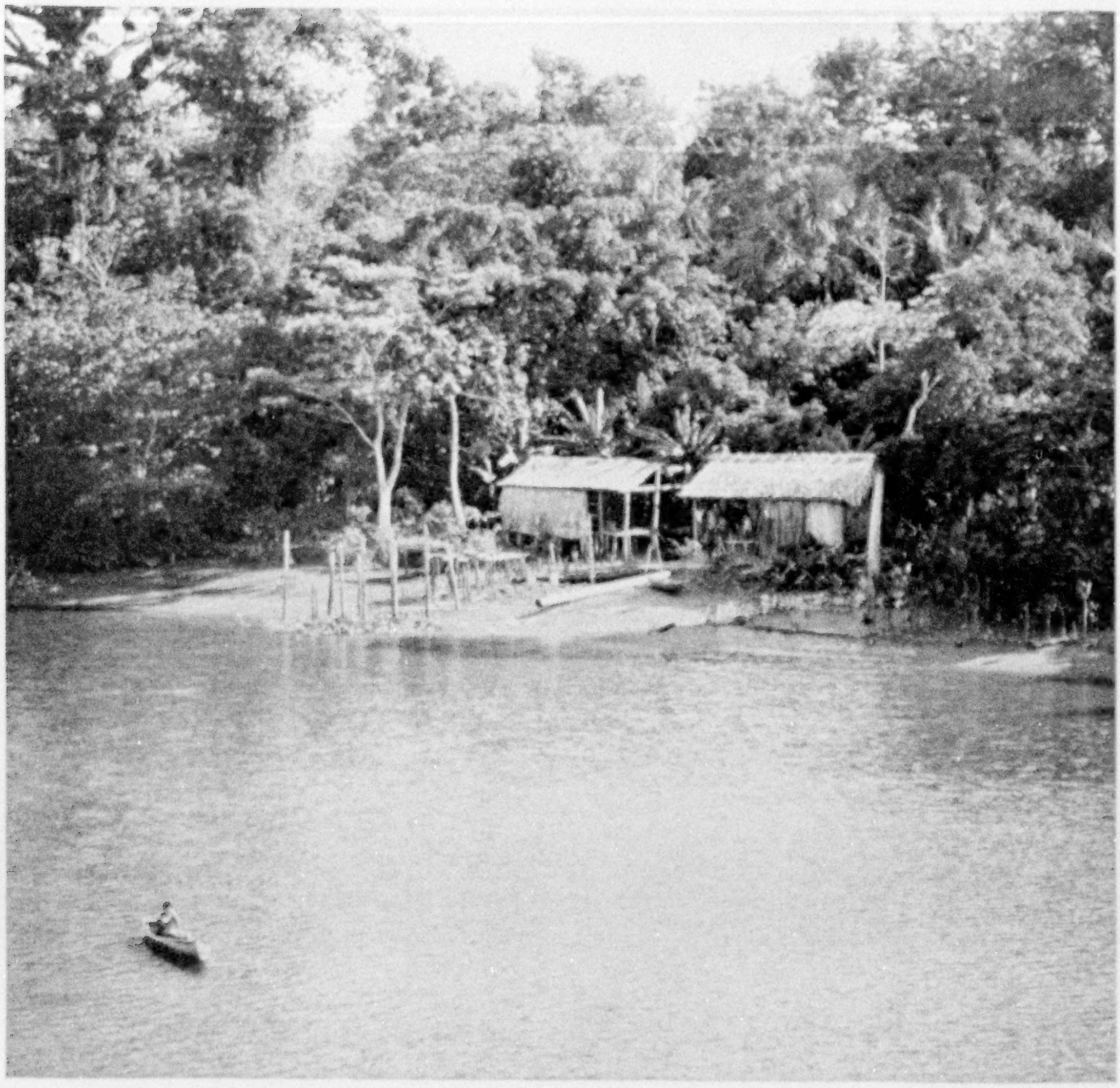
Now weather got so thick that I had to fly close to one bank, just under the trees, to keep on the river.

I had trouble orienting myself sometimes, too, because my map was on such a small scale and there were so many confusing stream junctions, islands and swamps, and no mountains as landmarks.

Sharp squalls, with almost pitch-darkness, struck us near the town of Gurupá, on the south bank of the Amazon, due west of Pará, which was our goal.

"Maybe we'll get there," I brooded to myself, as a thick squall like gray smoke hit us. I couldn't see 150 feet ahead. Water hit the plane's wings so hard it sounded like stones, and it felt that way on my face.

Chain lightning played like vines of electric light, linking the low clouds to the



Photograph by Capt. Albert W. Stevens

IN VAIN PUNY MAN WIELDS HIS FEEBLE AX AGAINST OVERWHELMING AMAZON JUNGLES

From the incomparable woods of Brazil vast quantities of forest products are recovered. Here and there, along rivers and the Matto Grosso's fringe, farms and plantations are cut from the ever-engulfing jungle; but, seen as a whole, the thick, humid, and impenetrable purgatory of mud, trees, and vines—despite the incalculable wealth of hardwoods it holds—is little better known than when Orellana came and fought the Amazon women (see text, page 281).

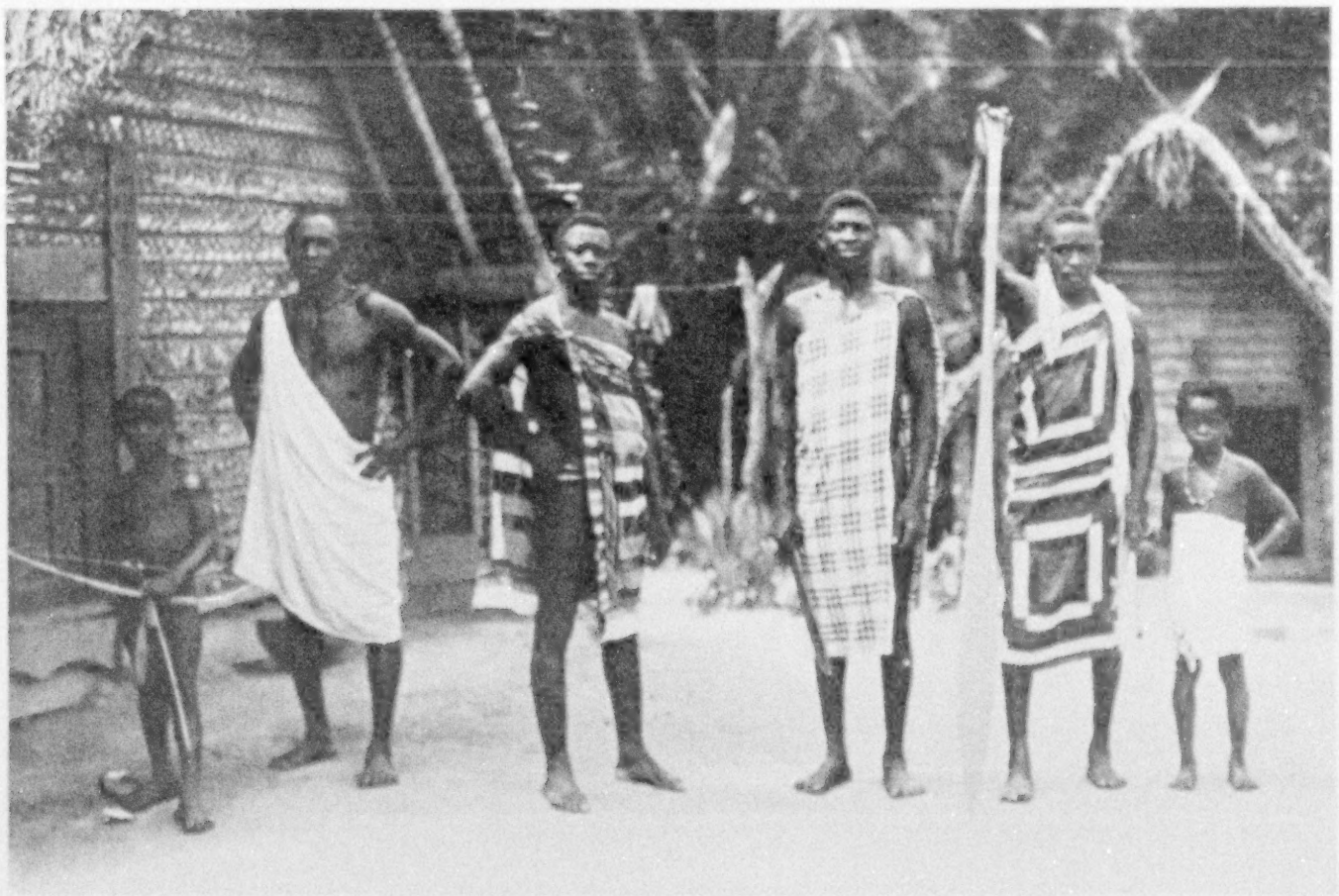
muddy river under us. One crashing stroke blinded us, so we feared the plane was hit. A strange vibration shook us, and the radiator began to leak. So hard and so quickly did these repeated squalls hit us, and so frightfully were we shaken and tossed about, that I almost lost control of our ship.

Now to the east, lying low, a bright, silvery sky strip showed, in strange contrast to the storm about us. After eleven weary air hours we alighted at Pará.

We were as miserable as wet hens. Our maps, notebooks, pencils, our soaked and sickly looking lunches, uneaten in the storm, floated about inside our plane; our cushions were like sponges. Rain water had even soaked into our wings and pontoons. Rain and wind take all the joy out of Amazon River flying.

It took us three days in Pará to dry off. There we met Maj. Herbert A. Dargue, leading a fleet of U. S. Army amphibian planes on a long flight around Latin America.* Mutually, I'm sure, we

*See, also, "How Latin America Looks from the Air," by Maj. Herbert A. Dargue, in the NATIONAL GEOGRAPHIC MAGAZINE for October, 1927.



© Eugen Klein

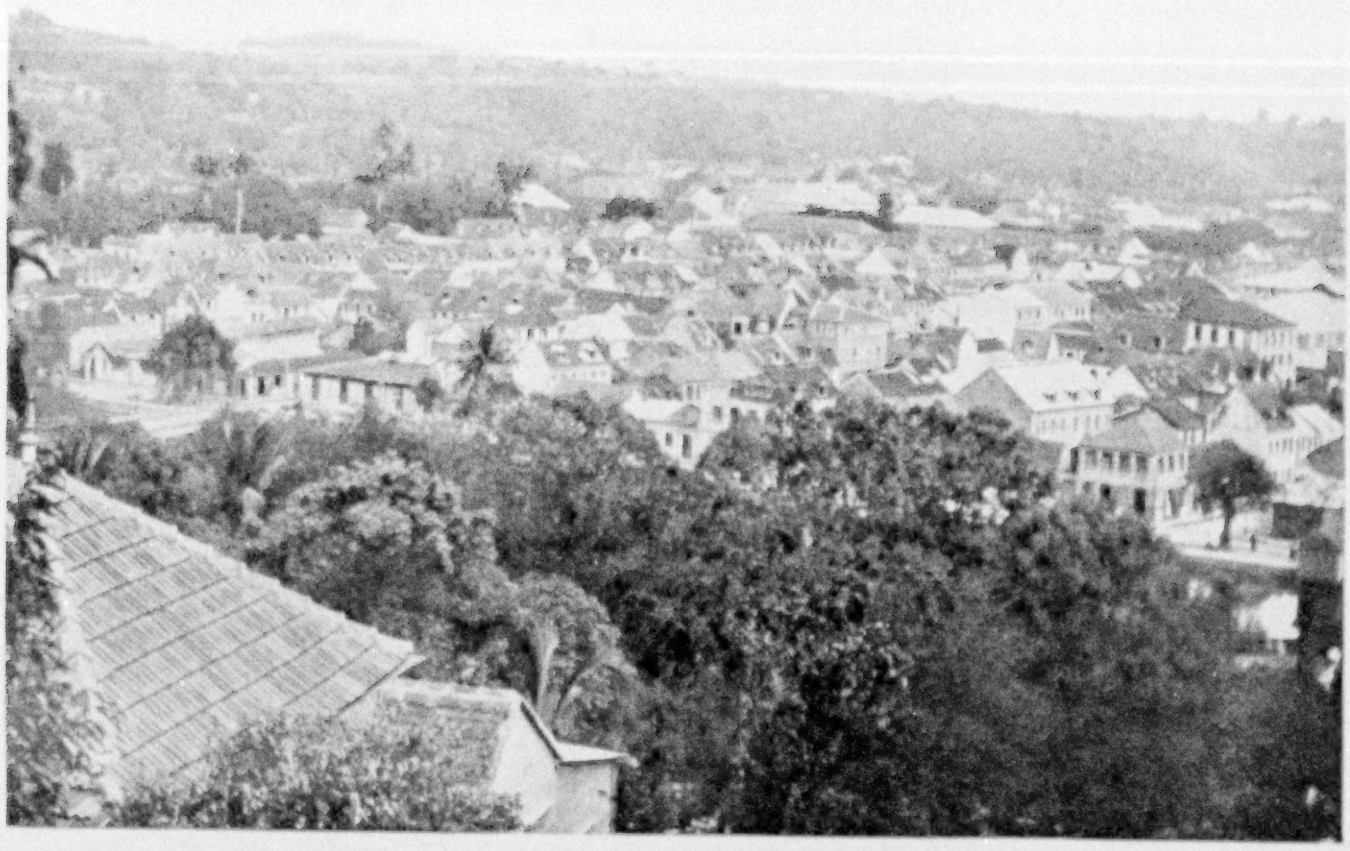
NOT MUCH INTERESTED IN AIRPLANES—OR ANYTHING ELSE

Bush Negroes of Dutch Guiana wearing costumes that resemble a towel, two strips of linoleum, and the summer slip cover from an auto seat. These are descendants of Africans imported to South America when Paramaribo was a slave market (see page 288).

Photograph by H. P. C. Melville

STYLISH, YET COMFORTABLE: IN DADA NAWA, BRITISH GUIANA

Sights and scenes as strange as any Sindbad ever saw may greet the world flyer. Hopping swiftly from city to jungle, from busy mainland ports to lonely islands of the sea, he sees in sharp, sudden contrast the diverse cultures of mankind.



POINTE À PITRE, ON THE WEST INDIAN ISLE OF GUADELOUPE, AS SEEN BY A COLUMBUS OF THE AIR

Columbus, the first Italian to see this lovely island, more than four hundred years ago, found the inhabitants busy boiling human flesh (see, also, text, page 291).

hugely enjoyed getting acquainted and comparing air adventures.

Pará, like Manáos, is a child of the Amazon. No railways from it penetrate the interior. The cost of such jungle roads would be too high.

MAN HAS YET TO EXPLOIT THE WORLD'S GREATEST FOREST

The Green Hell, the biggest forest in the world, is not without its drawbacks for Brazil. It is so vast, much of it still so impenetrable, that all its treasures have never been seen, much less appraised.

I chatted with the Director of the Commercial Museum in Pará, a man whose learning has not cramped his imagination.

He ventured the opinion that a whole regiment of forestry experts could not in ten years even classify the almost endless kinds of trees that grow there. One sees this mighty forest marching right up into the suburbs of Pará, as if defying man to cut it down and use it.

"Why doesn't Brazil exploit these riches?" I asked, as the Director showed me hardwoods of great specific gravity, and others light, flexible, and delicate.

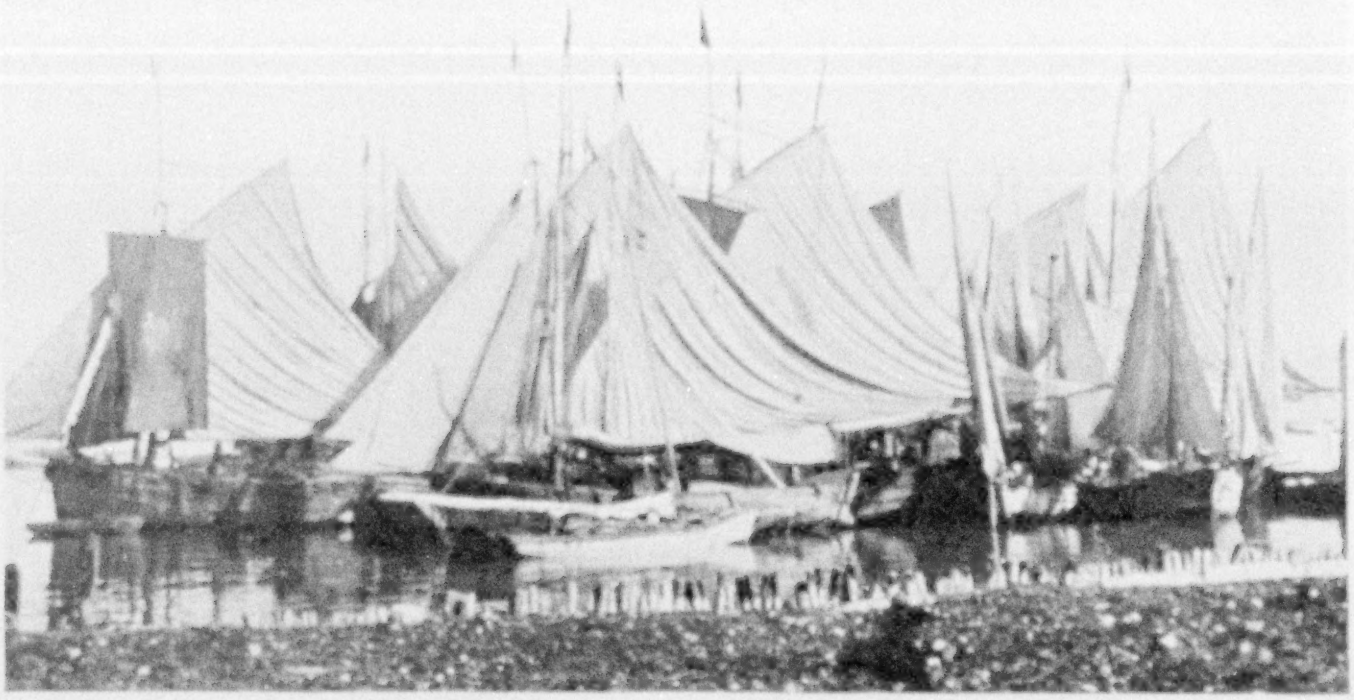
Plans and attempts were many, he said, and in easier spots, of course, much hardwood had been taken out; but any large-scale work, on a scientific basis, would call for an organization far greater than any yet undertaken. Brazil is training young men in scientific forestry against some future attempt at economic conquest of the Green Hell.

For days I had looked out upon that trackless, forbidding, and hostile inferno of Nature. The world will be much older, I feel, before sawmills disturb the sleep of its shade-loving denizens.

With the Italian consul at Pará, I explored the exuberant tropical flora of the city's public gardens. Some hot-land plants grow so fast that on still days you can almost hear their big leaves crack as they unfold.

A small snake wriggled in my path. "Look out for that reptile!" cried the consul. "You die quick from its bite!"

How multifarious a consul's duties! At Manáos our diplomat's clever words



Photograph by Simon Hahn

A HAITIAN FISHING FLEET ANCHORED AT PORT AU PRINCE

saved me from a lady's scorn when I snored while she sang; here was another, saving me from Cleopatra's fate!

JUNGLE FOLK USE "WIRELESS TELEPHONES"

Our consul here had lived long in Africa before coming to Brazil. He spoke of many strange customs peculiar to both, though widely separated.

"The Indians of these regions," he said, "like those of equatorial forests in Africa, are very superstitious, with similar strange customs. For example, I have observed that here, in the interior of the forests, they use a species of tree trunk for communicating from one tribe to another over distances of several miles. It is six or seven feet high, very hard, and the inside is hollowed out by fire. These trunks, when struck with a hammer, produce sounds which carry a long way. Indians receive these sounds by placing the ear on a similar instrument. It is a species of primitive telephone with a conventional language.

"In the savage sections of Africa, where I lived for many years, natives use the same system. Frequently I saw a tribe abandon, without any apparent reason, the village where it had been living. The truth was that this tribe was fleeing from the foray of enemies, forays that were being prepared many days away; but, thanks to having been advised by friends, through this special telephone, those in danger got away."

In the Zoological Park at Pará I saw a live condor. Here I could admire one of the things that caused me alarm during our flight over the Matto Grosso (see text, page 268). I looked close at this big bird, as husky and heavy as a fat young boy; then I thanked Providence that my propeller hadn't hit his brothers (page 274).

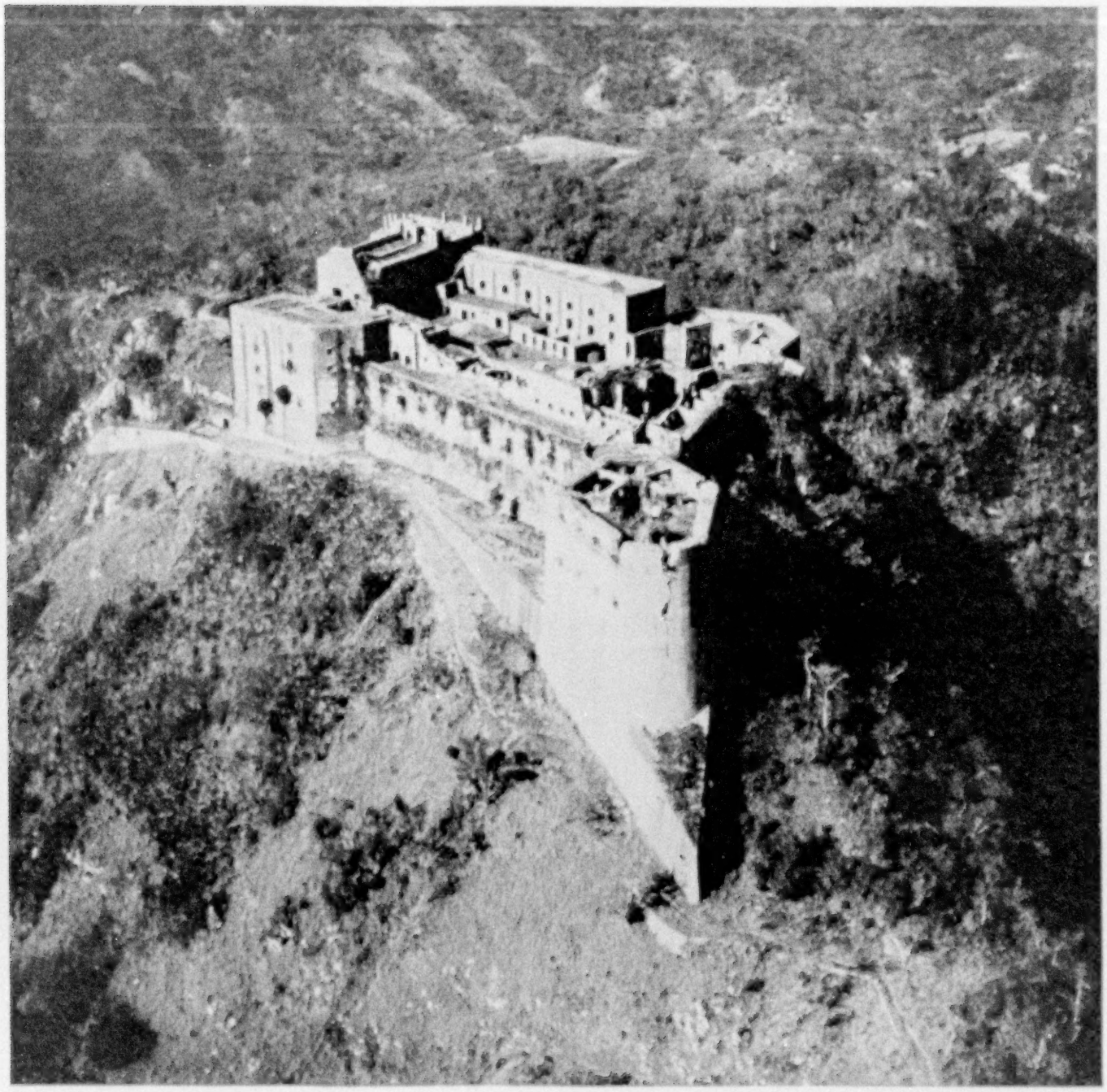
AN ALLIGATOR "DRIVE" IN BRAZIL

Some captive alligators blinked near by. To Brazilian farmers these voracious reptiles are like wolves on a Wyoming sheep ranch. In the dry season there are alligator drives, like those on destructive rabbits in Australia.

At low water groups of men herd the alligators into favorable spots and then shoot them. Though dangerous in the water, even to boats, when cornered in a dry creek bed they make no resistance. A thousand or more have been killed in one big drive.

A prisoner in the Pará jail sent me a beautifully made, guitarlike instrument; it had my name engraved on it. I imagined he may, in his dreams, have escaped from jail in an airplane.

Like our American brothers of the air,



Photograph by Albert K. Dawson

AVIATORS FLYING OVER HAITI TRY ALWAYS TO GET A GLIMPSE OF THIS AMAZING CITADEL OF KING CHRISTOPHE

In all the turbulent history of pirates, plots, political intrigue, and rebellion in the West Indies, no figure looms so large as the Black King of Haiti. From barroom to throne, from illiterate slave boy to powerful ruler, diligent in his people's welfare, Christophe lived his short but eventful life (see, also, "A Little-Known Marvel of the Western Hemisphere: Christophe's Citadel," in the NATIONAL GEOGRAPHIC MAGAZINE for December, 1920).

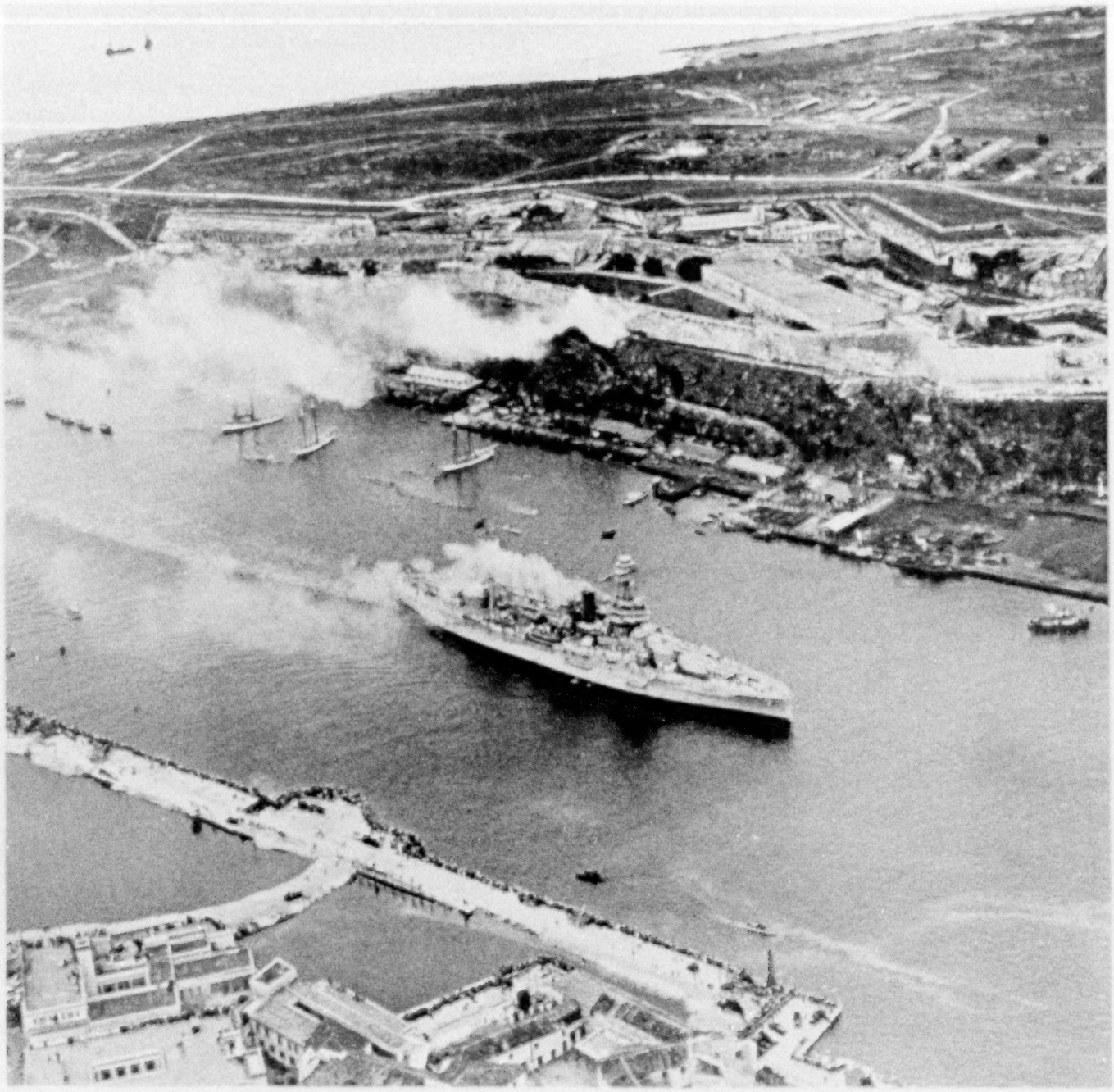
Del Prete, Zacchetti, and I had been toiling to put our machine in shape to fly to the United States.

UP THE EAST COAST OF SOUTH AMERICA

The Americans left first, kindly offering to share any supplies possible on the route ahead. But we chose different courses. From Pará I turned west, into the delta of the Tocantins; then north, into the Amazon Delta, hopping the Equator where it cuts the wide, ugly mouth of this stupendous river. To celebrate that hurdle, we took a drink of port wine. Sentimentally, not geographically, we felt nearer home north of the line.

Flying north, we came to the low, sandy Guiana coast, cut by countless streams—a dreary, unfriendly patch of the earth. Somewhere hereabouts, perhaps, the American aviator, Paul Redfern, was lost, when he sought to fly alone from Brunswick, Georgia, to Brazil, in 1927.

At noon Cayenne, the capital of French Guiana, looked from the sky like a charming place, but I'm sure the criminals



© Victor Dallin

HAVANA SHORE BATTERIES SALUTE THE U. S. S. "TEXAS," BRINGING PRESIDENT COOLIDGE TO CUBA

From the days of Columbus and Cortez, great events affecting the history of the Western World have been staged in Havana harbor. It is one of those strategic spots where things are forever happening. In 1928 Havana entertained the Pan American Congress, called to discuss various questions of importance to Latin America and the United States. Commander de Pinedo reached Havana during the sessions of this Congress.

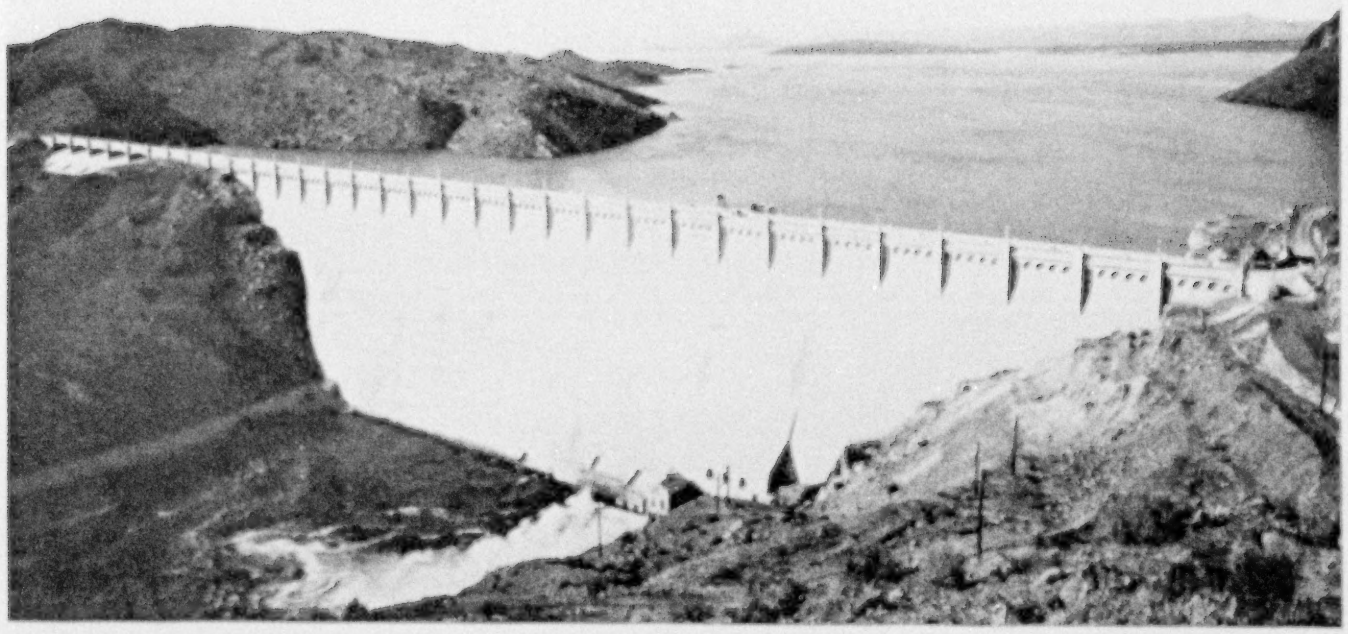
France deports to the penal colony here wouldn't agree.

Thick vegetation crowded from the mainland right down to the sea. Fiction and real tales are full of the frightful adventures of prisoners escaping from Cayenne only to perish in this awful jungle. Roaring over this dense green mat, our plane scared up flocks of birds, some of flaming red.

On the mile-wide tidal river of Surinam at Paramaribo, city of unsavory early history, we came to rest. To-day this town is the prosperous capital of Dutch Guiana, or Surinam but for generations it was the evil haunt of slavers. French, English, and Dutch fought for it, and time was when Surinam was a name that made civilization blush.

Now its Dutch atmosphere of broad, tree-planted streets, its many neat public parks, and its sturdy architecture* show how thoroughly it has cast out its devils

* See, also, "Picturesque Paramaribo," by Harriet Chalmers Adams, in the NATIONAL GEOGRAPHIC MAGAZINE for June, 1907.



Photograph Courtesy U. S. Bureau of Reclamation

ON HIS HAZARDOUS WESTWARD FLIGHT FROM TEXAS, DE PINEDO ALIGHTED ON ELEPHANT BUTTE LAKE

Built to dam the Rio Grande in lower New Mexico, this giant structure is at present the largest in storage capacity in the United States. The project not only irrigates the vast lower Rio Grande country, but also diminishes the damages once done by frequent floods.

Official Photograph, U. S. Army Air Corps

SAN ANTONIO LOOKS UP TO SEE DE PINEDO, ESCORTED BY ARMY PLANES, HOP OFF

Official Photograph, U. S. Army Air Corps

UNDER THE FRIENDLY AFTERNOON SHADOWS OF MOUNT FRANKLIN SPRAWLS EL PASO, TEXAS

The highway in the upper background circles the shoulder of this 6,500-foot peak. From here a man with good eyes may see down the Rio Grande Valley, or south into Mexico, for more than 100 miles. For unknown centuries Aztecs, Toltecs, and Apaches, then Spaniards and Americans, moving north and south on our continent, tramped through the famous Paso del Norte (Northern Pass), which runs along the Rio Grande, to the west of Mount Franklin. It forms migration's natural path through a dry, rough land.

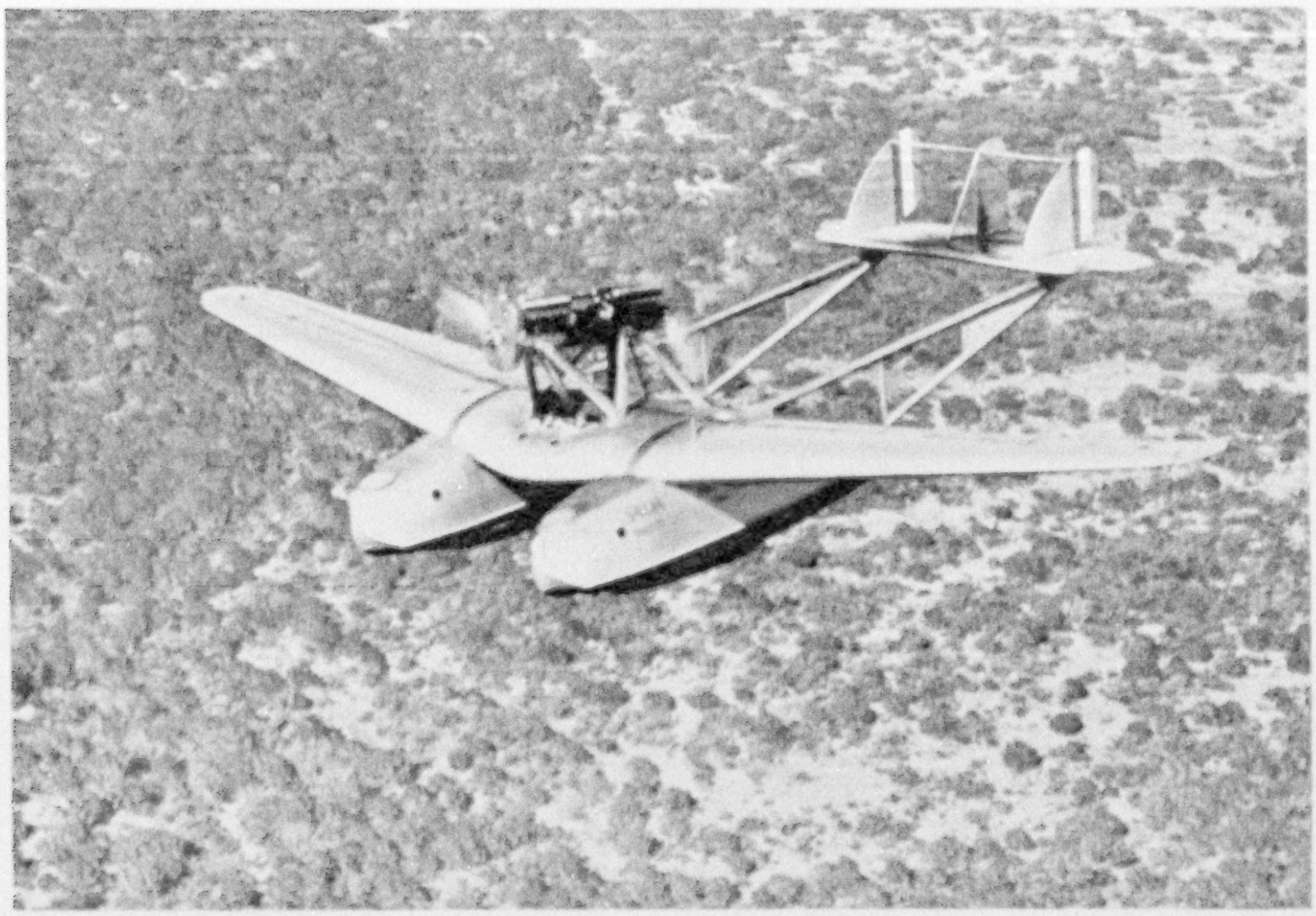
since that turbulent time when half its houses were grog shops. Gas now, instead of rum, Paramaribo sold us, and waved us cheerily on for Georgetown, where we landed the same day.

British colonials in Georgetown were so busy at tennis that it took us a long time to refuel.

By a hairbreadth, next morning, we missed our last, long sleep in the Georgetown graveyard. In a hard wind, blowing from a bad direction, I had to climb out of the river from between a lot of sailboats tied there and a row of houses that overhung the water's edge. Just as I turned a strong gust caught the good *Santa María*. I gulped and held her, but I feared her time had come. Somehow we struggled out.

WHERE CANNIBAL POTS USED TO BOIL

Into screens of low, black fog that hugged the sea ahead we soon dived, like a flying fish into a wave. Hours later,



Official Photograph, U. S. Army Air Corps

OVER THE ROUGH, DRY PLAINS OF TEXAS, WHERE FORCED DESCENT WOULD HAVE MEANT DISASTER, THE SEAPLANE BOLDLY TOOK ITS WAY

deaf from the motor's growl, and now far up the Lesser Antilles bridge, we landed on Guadeloupe Island.

You will understand my emotions. I am an Italian. So was Columbus. Now, I was halting my *Santa Maria* at the same spot where Columbus anchored his toy ships 435 years before.

Conjuring in mind a picture of that day in 1493, I strolled along the beach where the great Admiral came ashore. Caribs were here then, cooking human flesh in their pots. Women went naked (see, also, page 285).

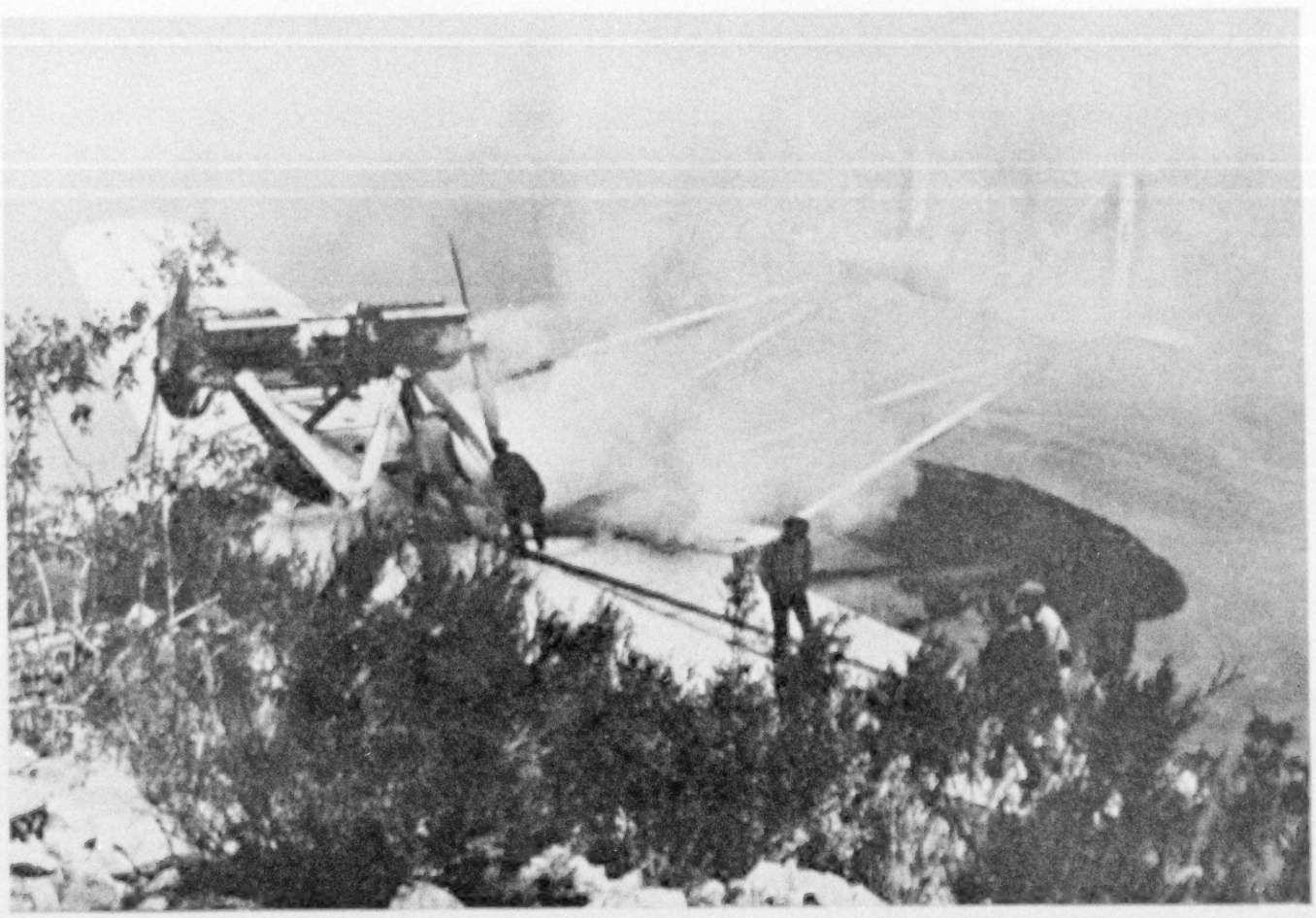
Now women passed wearing spike heels and flesh-colored stockings. Where the Carib had boiled his obscene cannibal pot, clean shops now sold imported meats packed in fancy containers. Big sugar mills, cocoa and coffee sheds rise where once the pagans ran wild.

Columbus, quitting Guadeloupe on his tiny ship, had to wait for a good wind. When I was ready I got up and flew away. Calm and sure this flying was, not precarious, as over the Green Hell or in Amazon squalls.

Steady as a big automobile on a smooth highway, we soared the sky roads past Porto Rico. Off its south coast lay two American cruisers. On fine flights like this, the hum of the wings whizzing between sea and sky is like triumphant music. It brings lively fancies. I looked down at the two white cruisers, so distinct a target against blue water, and thought of coming wars. Then giant seaplanes, bigger than any we think of now, may drop bombs weighing tons, wiping out fleets of cruisers.

HAITIAN ORATOR DOES NOT FALTER AS PLATFORM COLLAPSES

One can fall hard without ever going up in an airplane. The platform fell down at Port au Prince in Haiti, carrying with it speech-makers bidding us welcome. Talking grandiloquently as it went down was a black alderman. He kept right on, too! Like a sea captain shouting vain orders from the bridge of a sinking ship, that brave orator stuck to his job of saying official welcome. I felt the platform cracking and got off. Happily, no one was hurt.



Photograph from Comdr. Francesco de Pinedo

THE AIR CONQUEROR, AT REST, IS ATTACKED BY FIRE

In refueling the great seaplane which had flown over four continents, gas was spilt overboard at Roosevelt Lake, Arizona. From a skiff near by a careless smoker threw a lighted match. Flames ran over the floating oil and the *Santa María* was destroyed (see page 295).

By taking long steps, a giant could walk dryshod from Venezuela to Florida, stepping from island to island, along the Lesser and Greater Antilles.*

On our stride from Haiti to New Orleans we put a foot down, so to speak, on Cuba. Havana embraced us with all the fervor of its gay, impulsive heart. Cuba, Columbus wrote, was the most beautiful and fertile of all the islands. Now capital has multiplied island wealth a thousandfold. Havana's business quarter is strikingly like a bustling American city in looks, methods, and prices!

In slightly less than seven hours we hopped the Gulf of Mexico from Havana to New Orleans. By compass we aimed for the Mississippi Delta.

"There's land!" I signaled. But the joke was on me. I had been deceived by the color of water ahead. The big river in flood literally brings down mountains of mud, which colors the Gulf for miles.

Soon, however, we were above the mighty stream flowing between levees, back of which we saw vast marshes overgrown here and there with brush and small trees.

"SANTA MARÍA" THE FIRST FOREIGN PLANE TO FLY TO AMERICA

Smoke—"a pillar of a cloud by day"—guided us, as it did Moses, and we found New Orleans. The *Santa María* was the first foreign plane to reach the United States under her own power.

Reporters in America were as thick here as mosquitoes in the Green Hell. They swarmed; so did photographers. How fast they work! A visitor arrives. Posed before the City Hall and grinning foolishly, he is photographed shaking hands with the mayor. An hour later newsboys wave wet, ink-smelling sheets under the visitor's nose, his own face, with hard, "retouched" eyes, staring reproachfully up at him; and all the stupid or clever things the visitor said are printed.

Jumping on to Galveston, we got ready

* See, also, "To Bogotá and Back by Air," by Col. Charles A. Lindbergh, in the NATIONAL GEOGRAPHIC MAGAZINE for May, 1928.

Photograph from Comdr. Francesco de Pinedo

THE LAST OF THE "SANTA MARÍA"

Through tempestuous decades, beaver trappers, gold hunters, Apache massacres, and outlaw feuds made this region of Arizona notorious. Yet in all its eventful annals, it has seen nothing more spectacular than the loss of this seaplane.

for our perilous flight over dry deserts and mountains to California.

"You are foolhardy," people said. "A seaplane, if forced down on hard, rough country will tip over or tear itself to pieces." But in more than 160 hours of flying from Italy my boat had covered more than 17,000 miles and had never failed me. So we started over the flat fields and oil wells of east Texas.

Along the airline course from Galveston to San Diego lay three artificial lakes, the Colorado River, and the Salton Sea, on any of the five of which I might alight. My plan was to use Medina Lake, near San Antonio; Elephant Butte Lake, in New Mexico, northwest of El Paso, and the lake at Roosevelt Dam, in Arizona.

"You can't alight on Medina Lake; it's too full of trees." So, in substance, telegraphed an American Army flyer from San Antonio, one I had met on my voyage across the Philippines.

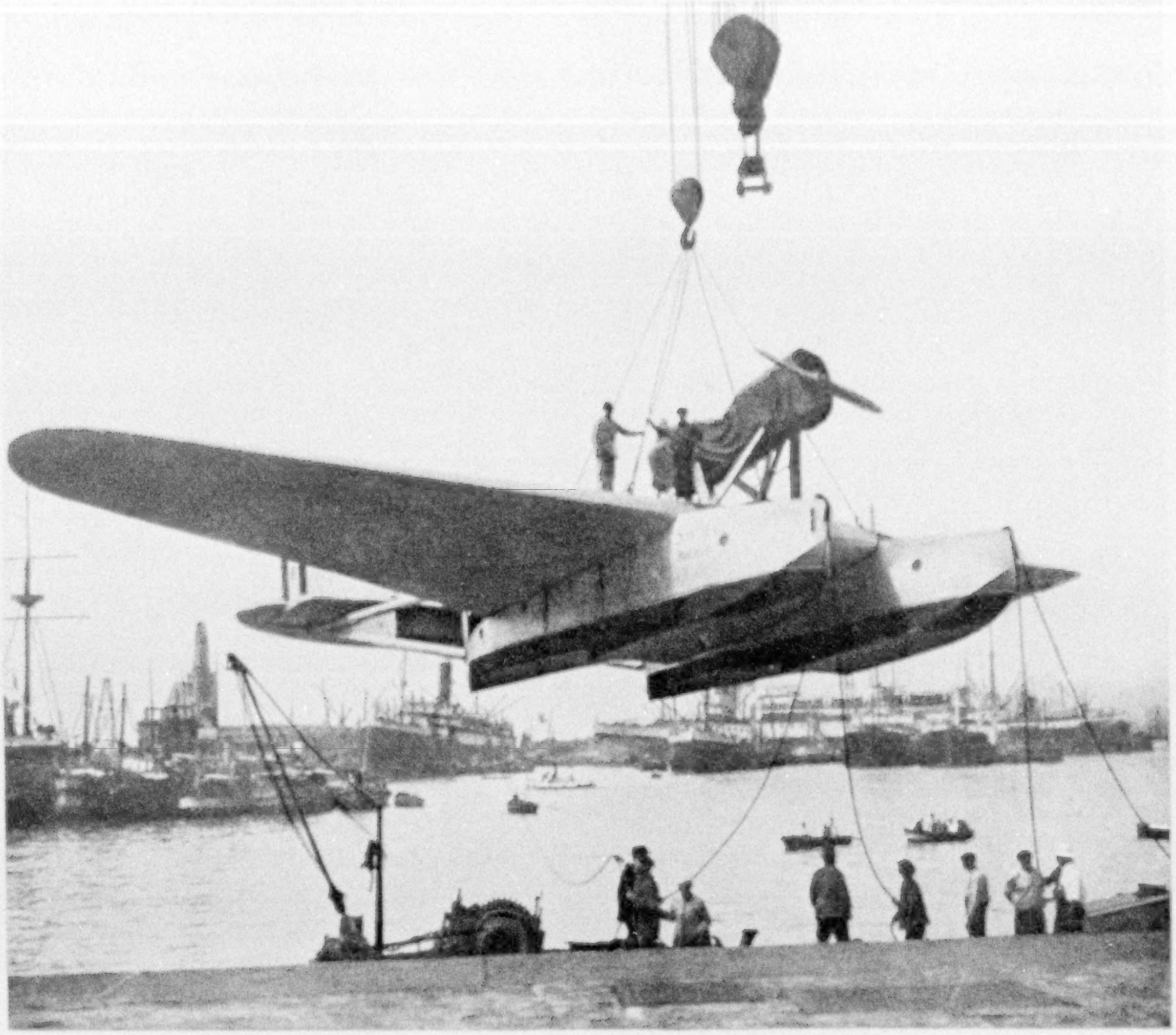
But we did, although getting off again was a hard job. Trees, standing there when the artificial lake was filled, still rise above the water. These and the perfect calm of the surface made a take-off difficult. Finally, by having a motor boat run ahead of us to make waves, and with the help of a light breeze, we lifted our loaded plane.

A SEAPLANE DARES THE AMERICAN DESERT

I made for the Rio Grande. Low clouds kept me close to earth. Nothing below but miles and miles of empty, mesquite-covered flats. Highways and railroads made long, straight avenues through this singular-looking country. We saw a few ranch houses and many cattle. Toward Del Rio the country grew more hilly, with green irrigated patches along the river.

The Rio Grande is as crooked as a crawling snake. To stay on my straight compass course, I crossed back and forth many times. Often I got far from it, over a dry, empty world, with not a sign of road or human habitation.

I got up to nearly 10,000 feet. At that, I wasn't so high, compared with the mountains now in sight ahead.



Photograph from Comdr. Francesco de Pinedo

"SANTA MARÍA THE SECOND" BEING LOADED AT GENOA FOR SHIPMENT TO NEW YORK

This seaplane took the place of a sister ship, lost by fire in Arizona (see text, page 295). In this craft De Pinedo finished his American tour and flew back to Rome.

Over frightful canyons hot winds tossed the *Santa María* till she bucked like a mule. Often the trickling river lost itself to our view between canyon walls.

We passed Presidio, a Texas border town. Soon after, in dismay, I saw that while we were flying upstream we were badly off our course by compass. A river called the Conchos flows up from Mexico and into the Rio Grande just above Presidio. In that hill tangle I had picked the wrong river.

THROUGH THE HISTORIC PASO DEL NORTE

Good old compass! Eventually we saw a railway—the Southern Pacific, our map said. We followed it to El Paso. Here the Rio Grande ceases to form the international boundary and turns north into New Mexico.

In a devilish dance of furnace air we climbed through the Paso del Norte, scraped the shoulders of Mount Franklin, whose afternoon shadows fell across El Paso, and headed for Elephant Butte Lake. On our right rose the serrated Organ Mountains, cleft and shattered in ancient telluric upheavals. Below us, green alfalfa and cotton fields unfolded, watered from ditches fed by the vast artificial lake behind Elephant Butte Dam. On this body of water, deep and clear, fringed by dry, barren hills, we came to rest.

"Well, I guess yours is the first seagoing craft that ever got up on top this desert world," said a cowboy.

The next day we hopped again, straight out west, across New Mexico, for Arizona. To guide us, we used a railroad time-table. Dodging mountains, we flew

Photograph by K. D. Ganaway

MICHIGAN AVENUE, CHICAGO, LOOKING NORTH FROM THE ART INSTITUTE

Flying up the Mississippi Valley from New Orleans, the Italian aviators visited Chicago; then took off, across the Lakes, for Canada and Newfoundland, on their way home to Rome.

over vast, bowlder-strewn valleys, with occasional areas of grayish-looking range grass.

To ride a seaplane across a desert hunting a lake, was like flying an airplane over the ocean, seeking an isolated island on which to land.

We quit the railway in time and steered a compass course for Roosevelt Lake. We flew over Globe, Arizona, whose great smelters sent their smoke and fumes high in the air.

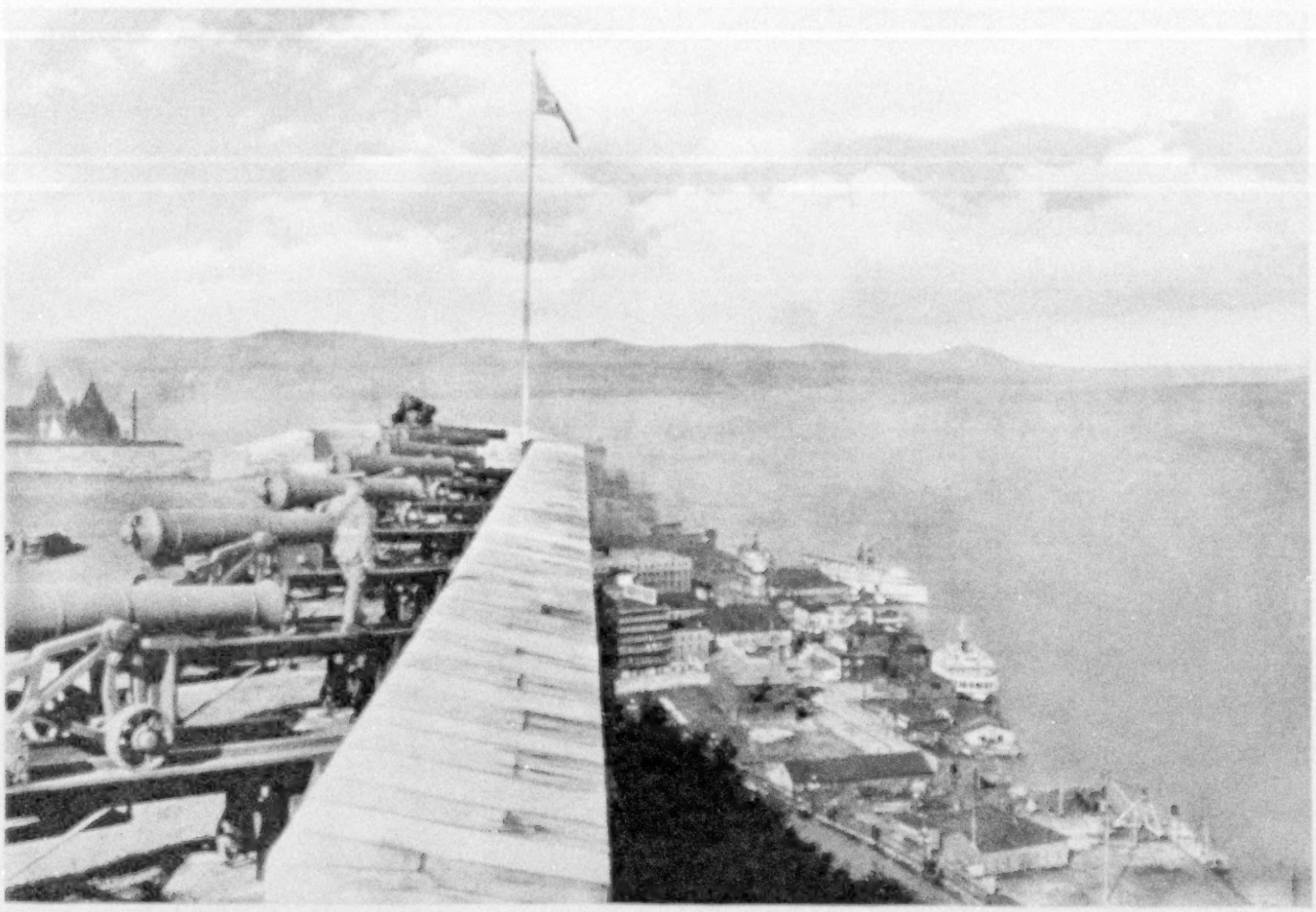
Odd, asparaguslike objects stuck up on dry slopes below—giant saguaro cactus, I learned later.

"The Land God Forgot," somebody called this corrugated inferno of bowlders, cliffs, and canyons so deep that they look black from far above.

Then down on the unrippled blue of Roosevelt Lake we settled. On its bottom I heard towns were left standing when the deep canyon was filled to make this mighty reservoir. Now fish swim through rotted doors and windows. Somewhere in those depths are a few rusting scraps of the *Santa María*, for she never rose again from Roosevelt Lake.

FATE CLAIMS THE "SANTA MARÍA"

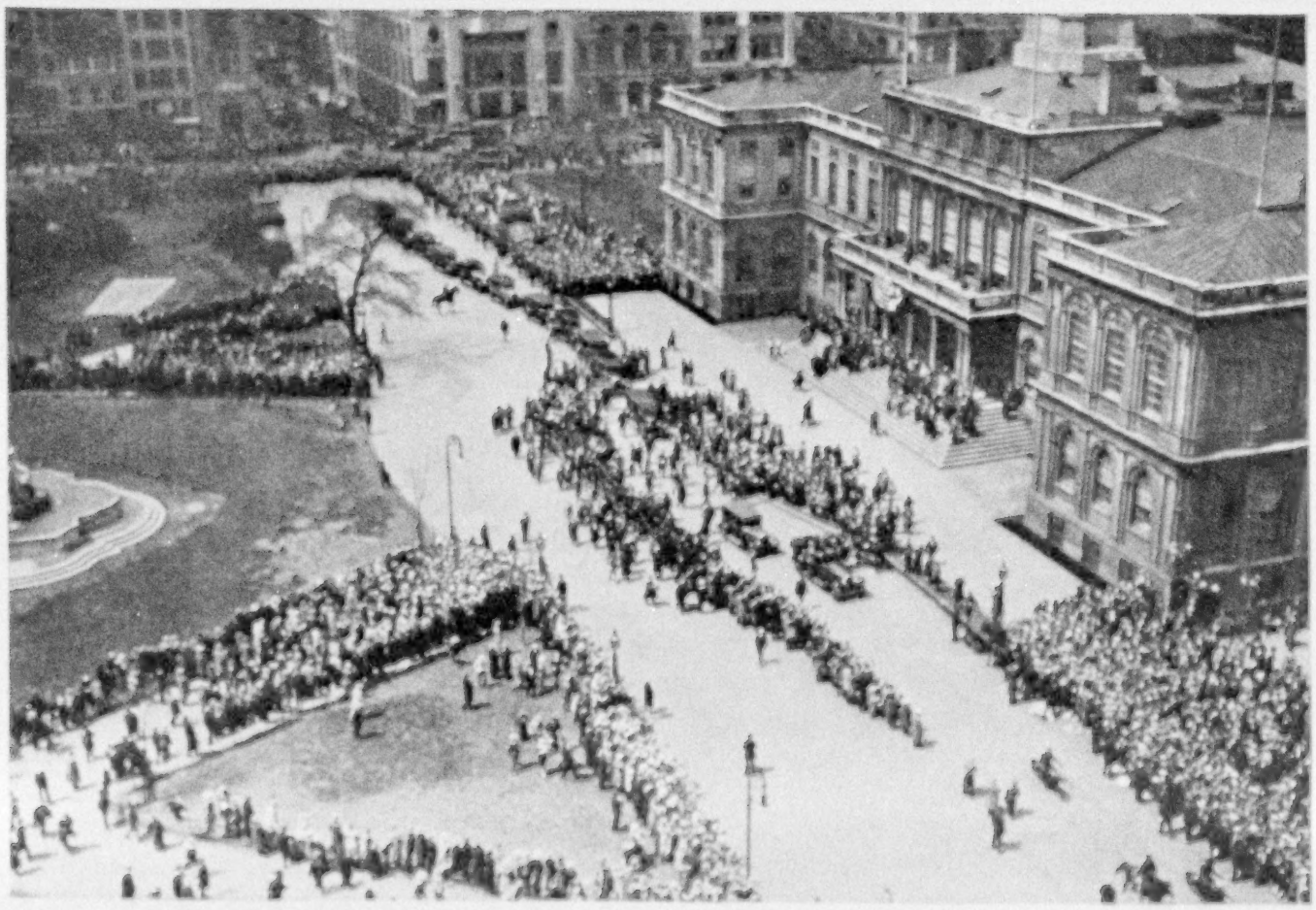
We were refueling. Some gas was spilt on the water. A careless boy lit a cigarette and threw his burning match into the lake. Our ship caught fire. I was



Photograph by William D. Boutwell

THREE LAYERS OF QUEBEC

It was General Wolfe's ambition to plant the British flag on the heights of Quebec. There it waves to-day, above the antiquated battery in King's Bastion. Immediately beneath it runs Dufferin Terrace to Upper Town. Far below lies Lower Town, with its busy wharves.



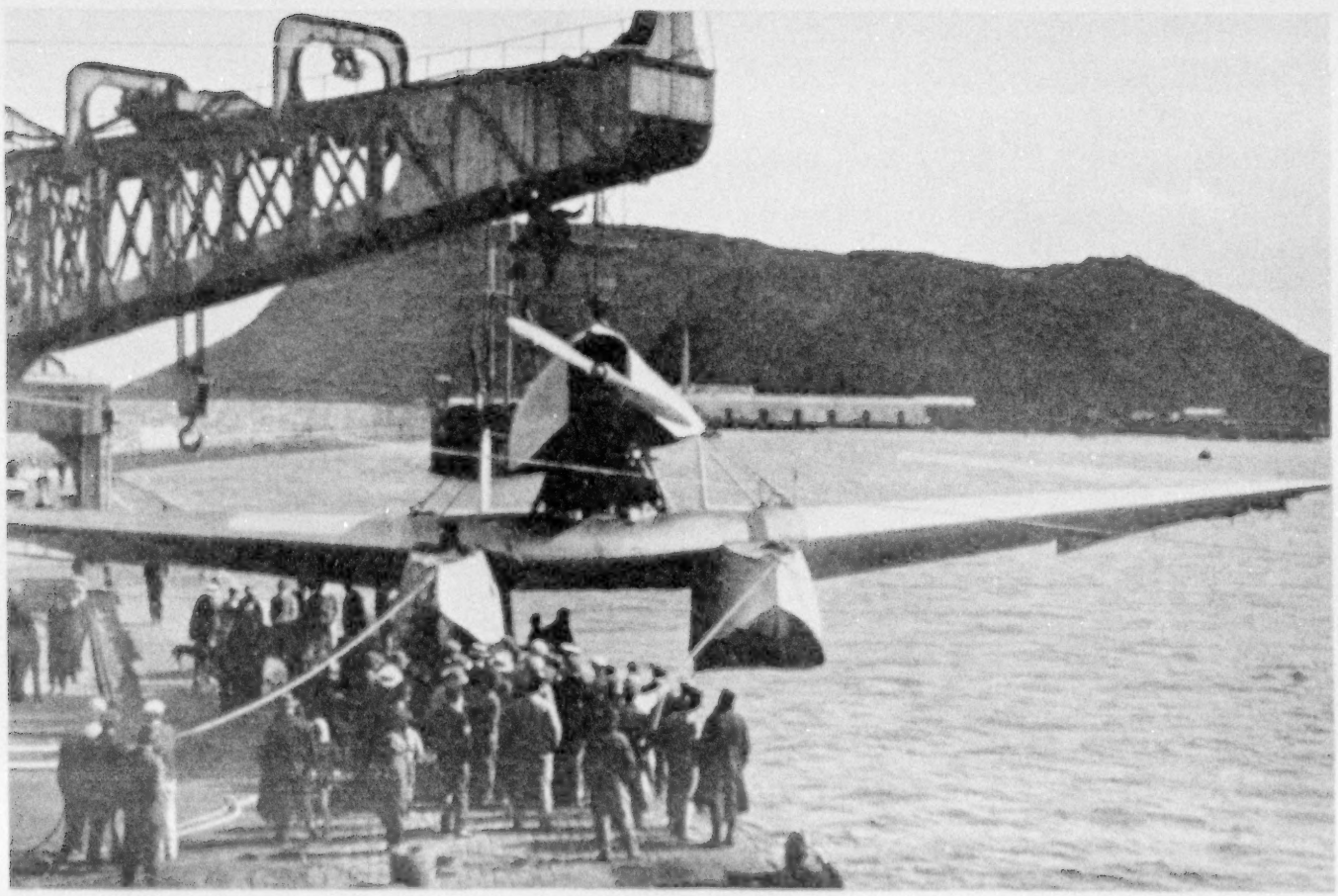
Photograph from Comdr. Francesco de Pinedo

HERO-WORSHIPING NEW YORK HONORS THE ITALIAN FLYERS AT THE PORTALS OF HER CITY HALL

Photograph from C. E. Engelbrecht

NATURE SET THE AZORES IN A SPOT HELPFUL TO ATLANTIC FLYERS

Maps reveal how the contour of coasts and the position of islands in oceans and seas determine the routes of overwater flyers. Terceira Island, of the Azores, seen from the U. S. S. *Los Angeles* on her flight from Germany to America.



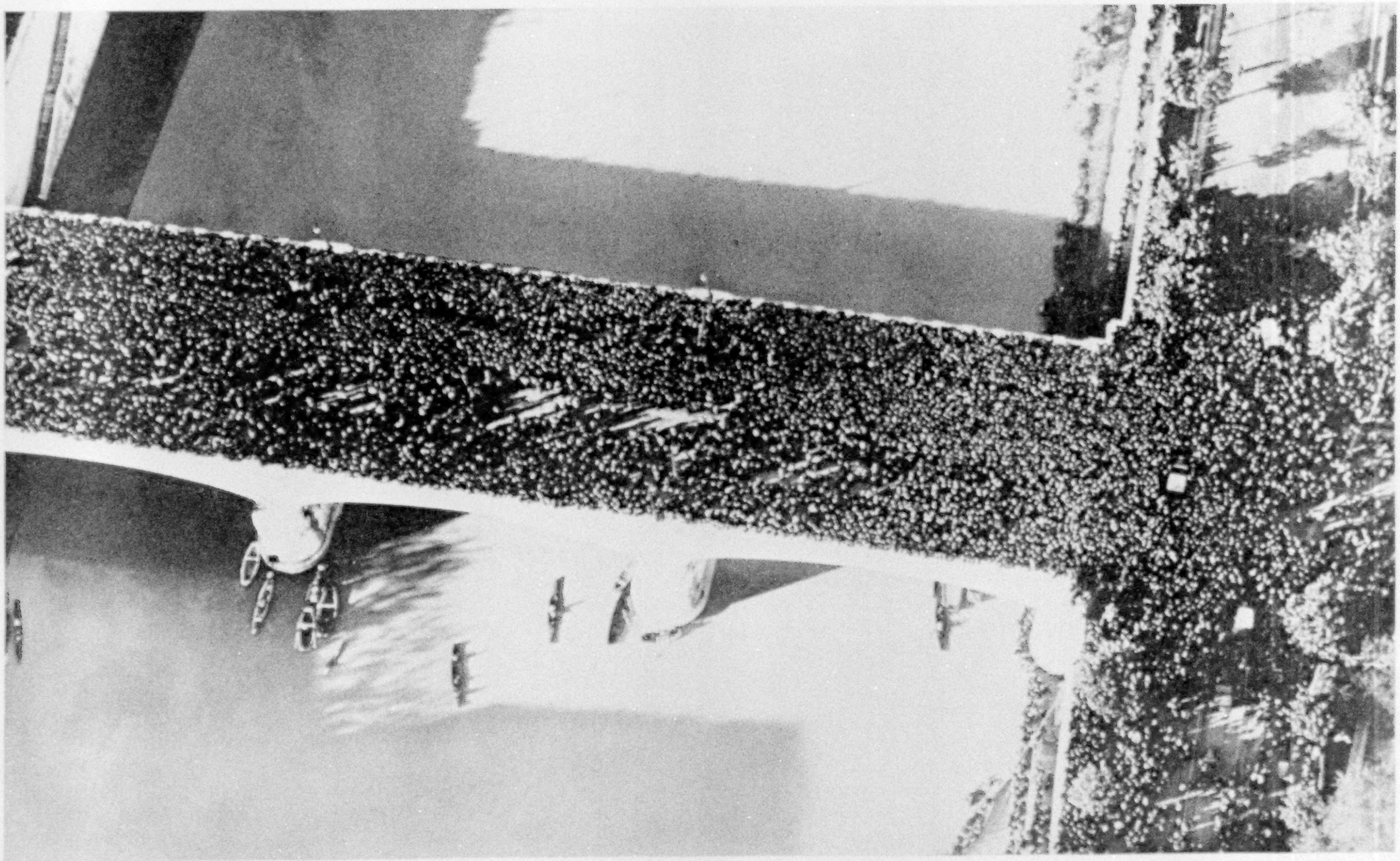
Photograph from Comdr. Francesco de Pinedo

TOWED HELPLESS INTO PORT, THE "SANTA MARÍA II" IS RAISED ASHORE AT HORTA, IN THE AZORES, FOR REPAIRS

Photograph by Poland

ABOVE THE BRIDGE AT MEMPHIS DE PINEDO BROUGHT HIS PLANE TO REST

In smoke and roar Tennessee's largest city works and sweats and piles her goods on river barges, and trade convention "specials" jam her extensive railway yards.



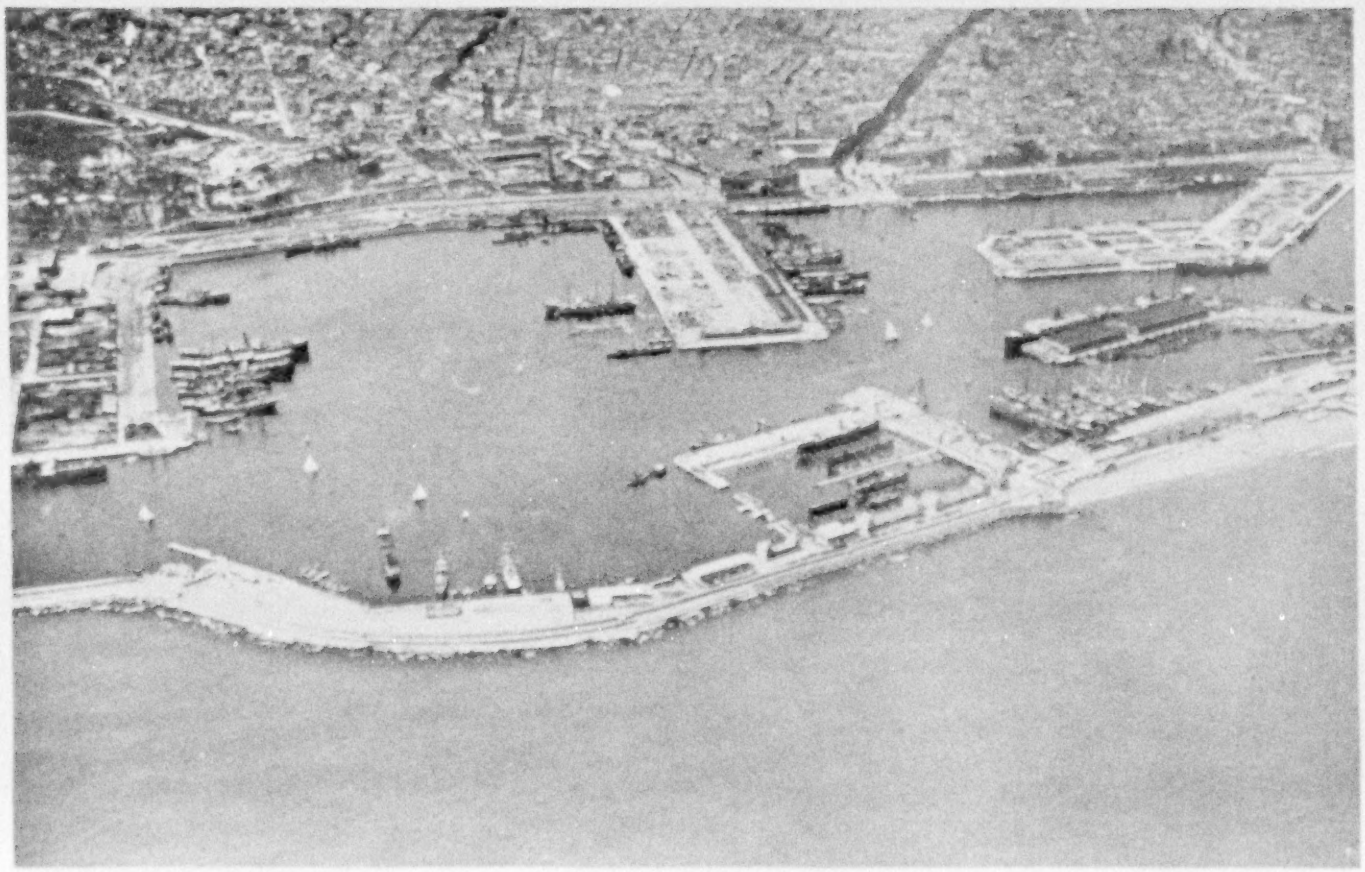
Photograph from Comdr. Francesco de Pinedo

A THRONG ON THE MARGHERITA BRIDGE, AT ROME, WELCOMES DE PINEDO HOME AFTER HIS CONQUEST OF SIX CONTINENTS

From the clear, empty sky, crowding, earthbound men seem as insignificant as so many insects. Old Malthus mulled his problems of overpopulation; Le Bon wrote that masterful study on the behavior of crowds; but world flyers like Lindbergh and De Pinedo know full well the impulse of crowds and how flying machines excite them. New York is no less curious than Timbuktu.

Photograph by Mariani

EMPLOYEES OF THE SIAI FACTORY AT SESTO CALENDE, WHERE THE "SANTA MARÍA" SEAPLANES WERE BUILT, WAIT TO WELCOME DE PINEDO



Photograph Courtesy Lignes Aériennes Latécoère

LONG BEFORE THE CHRISTIAN ERA, TRADING SHIPS ANCHORED IN WHAT IS NOW BARCELONA HARBOR

As early as the second century this city had become the chief seaport of the western Mediterranean. To modern Spain its ocean trade and its huge factories are of the utmost importance. Its blend of modern industrial life with ancient fêtes and church processions makes it unique among Spanish cities. Homeward toward his beloved Italy De Pinedo paused here.

Photograph by Mariani

A HAPPY HOME-COMING AFTER LONG MONTHS OF HIGH ADVENTURE

ashore when she burned. Luckily, Del Prete and Zacchetti escaped. More than once that faithful plane had saved our lives. As I saw it go up in smoke, my heart broke. That can happen.

Friendly American aviators came from San Diego and took us on to California. We saw it, from the follies of happy Hollywood to that magnificent city of San Francisco, dignified in character, beautiful in her classic posture beside the Golden Gate.

The American Government offered me another plane to complete my cruise; but a cable from Rome said my own government was sending a new *Santa María* by steamship to New York. So we went east and got it.

We flew down the Atlantic coast to start again from New Orleans.

The worst flood in all its watery annals was sweeping the Mississippi. New Orleans at any instant might have been engulfed, had her levees broken; but, in her courtly southern hospitality, no extraneous affair like a flood interfered with her attentions to us.

Upstream we flew. On the foul flood rode houses, uprooted trees, fragments of wooden bridges, often with wild animals crouching on them.

De Soto, another Argonaut, I reflected, slept somewhere under that yellow flood. He, too, explored big woods. How big the Americas are—the Amazon, the Mississippi! How true the words of Cortez to a churlish king: "I gave you more provinces than your ancestors left you cities." And what magic cities now, in this Western World; and what contrasts in progress, in civilization, it still affords! I thought of the Green Hell, and the valley of the Amazon; then of this highly cultivated Mississippi Valley, with Memphis and St. Louis. America, lustful of change, ringing with rivet hammers, sings in my ears!

On to Chicago we flew, and on to Montreal; then to Quebec, and Trepassey, in Newfoundland. Millions now know the name Trepassey, as in the World War they knew Kut and Gallipoli. It is from Trepassey that many Atlantic flyers hop for Europe. Some fall in the sea.

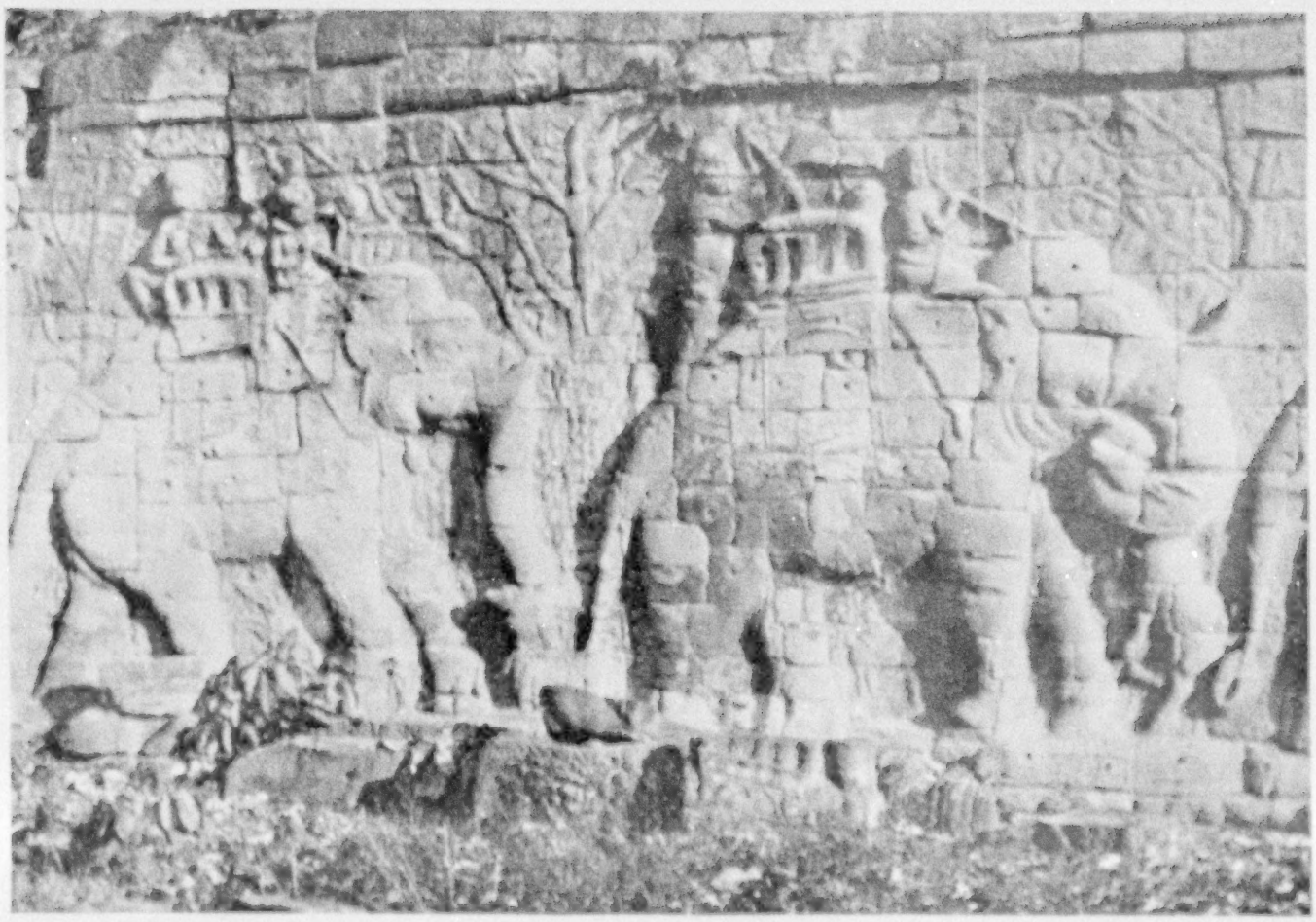
From Trepassey we started, too, for the Azores. As the wild goose stuffs his craw and starts his long migratory flight, so we filled our great iron goose with gas. But she couldn't carry enough. Far out at sea we squatted helpless on the open ocean.

Fortuitously, ships came. We were towed to the Azores. There I repaired our plane, battered in towing, and we flew home to Rome.

Photograph by Gervais Courtellemont

AN IMPROVISED DRESSING ROOM

A course in the proper and most effective use of powder, cosmetics, and drapes constitutes a part of the training given the Cambodian court dancers.



Photograph by Mrs. Emma L. Rose

THE EXPLOITS OF LONG-FORGOTTEN KHMER HUNTERS ARE STILL RECORDED ON THE TERRACES OF THEIR ANCIENT CAPITAL

FOUR FACES OF SIVA: THE MYSTERY OF ANGKOR

By Robert J. Casey

FAR up in the jungles of French Indo-China, some 300 miles from the doorstep of the world as measured in distance, a thousand years in the past as measured in time, and æons back in the unknown as measured in history, is Angkor, one of the most puzzling works ever contrived by the hand of man.

Temple and town and network of dim and forgotten shrines, it represents a culture that must have been far in advance of anything coeval with it and a power that must have been virtually irresistible even in Asia, where men at arms were plentiful and warfare was a favored business.

But the culture died and the men who had built it disappeared, and for hundreds of years the forests of banyan and bamboo hid from the eyes and memory of the world what had been a metropolis of a million inhabitants.

Two generations ago a French naturalist broke through the wall of jungle in a search for specimens of tropical life and came upon a spectacle such as the slaves of the lamp might have contrived for Aladdin. Before him, in the quivering silence, rose the five towers of a vast step pyramid, a stone tapestry representative of an art and architecture like nothing else within the ken of man.

TIME HAS DEALT LIGHTLY WITH THIS MAGIC TEMPLE

A moated wall surrounded it and a cloistered gate opened upon a causeway that led to its rocketing staircases; and, for all that jungle growths were close about its lower stage and odd clumps of verdure grew from its arched roofs, it seemed that life had been in its shadowy galleries only a moment ago. The temple was virtually intact.

The astonished visitor looked about for the ashes of altar fires and stood listening for the footsteps of returning priests. It seemed incredible that a people could have evolved a civilization such as that typified by the great temple and then have vanished without any of their neighbors hearing of it.

But there were no human beings in the empty halls, nor was there trace of man, save in the ruin of his works in the walled city to the north.

It is now more than sixty years since the stunned eyes of Mouhot, the naturalist, looked upon the magnificent heights of Angkor—more than sixty years since the greatest detective story in the history of the world was laid out with its million stony clews to puzzle the savants. Today, with its principal remains classified and ticketed, its inscriptions translated, and its monuments lifted out of the jungle, Angkor is still the vast and silent mystery that it was in the beginning.

AUTOMOBILE ROADS NOW LEAD TO THE GREAT MYSTERY

The world knows more about it now. Splendid automobile roads, cut through what was once a thicket of bamboo and is now an endless rice field, bring the traveler, on regular schedule and with little personal discomfort, from Saigon, at the foot of Asia, to the bungalow on the edge of the Angkor moat, in a few hours. Yearly hundreds of visitors from all parts of the world are seeking out this odd corner and carrying away with them amazed reports that will lure other hundreds.

And yet, were it not for the fact that these tremendous zikkurats remain much as they were when they were first built, defiant of time and weather, by the Tonle Sap (Great Lake), the incredible tale of the civilization that built them and vanished would rank as it did in Mouhot's time, as a none-too-cleverly-constructed myth.

But the monuments are there and no mere shutting of the eyes will dispose of them: Angkor Thom, a walled city within whose metropolitan area at one time must have lived more people than were to be found in the Rome of Augustus or the Carthage of Hannibal; and Angkor Vat, supreme architectural effort of this strange culture, not only the most grandiose tem-

Drawn by A. H. Bumstead

FROM ANGKOR THE KHMERS RULED A VAST EMPIRE

ple of the group, but one of the most stupendous undertakings begun by man since the cornerstone was laid for the Tower of Babel.

ANGKOR'S PEOPLE DESERTED THE FINEST METROPOLIS IN ASIA

About Angkor Thom are scattering remains of earlier edifices, and far in the jungle are capital cities built and abandoned with that prodigality which seems always to have been characteristic of oriental monarchs. Traces of this lost civilization have been found wherever a lean tributary of the Mekong River branches out toward the north, and there is plentiful evidence now that the temple builders were part of a population which may have reached a total of thirty millions.

Here at Angkor was the finest metropolis in Asia—a town whose swaggering splendor is permanently embossed in temple wall and tower and terrace. It was the perfect expression of a race of conquerors and must have been as wealthy as Babylon under Nebuchadnezzar. And yet, for some cause which an archeologist can only guess, the populace walked out of it and never came back. The jungle moved in and engulfed it for five centuries.

There begins and there ends the mystery of Angkor.

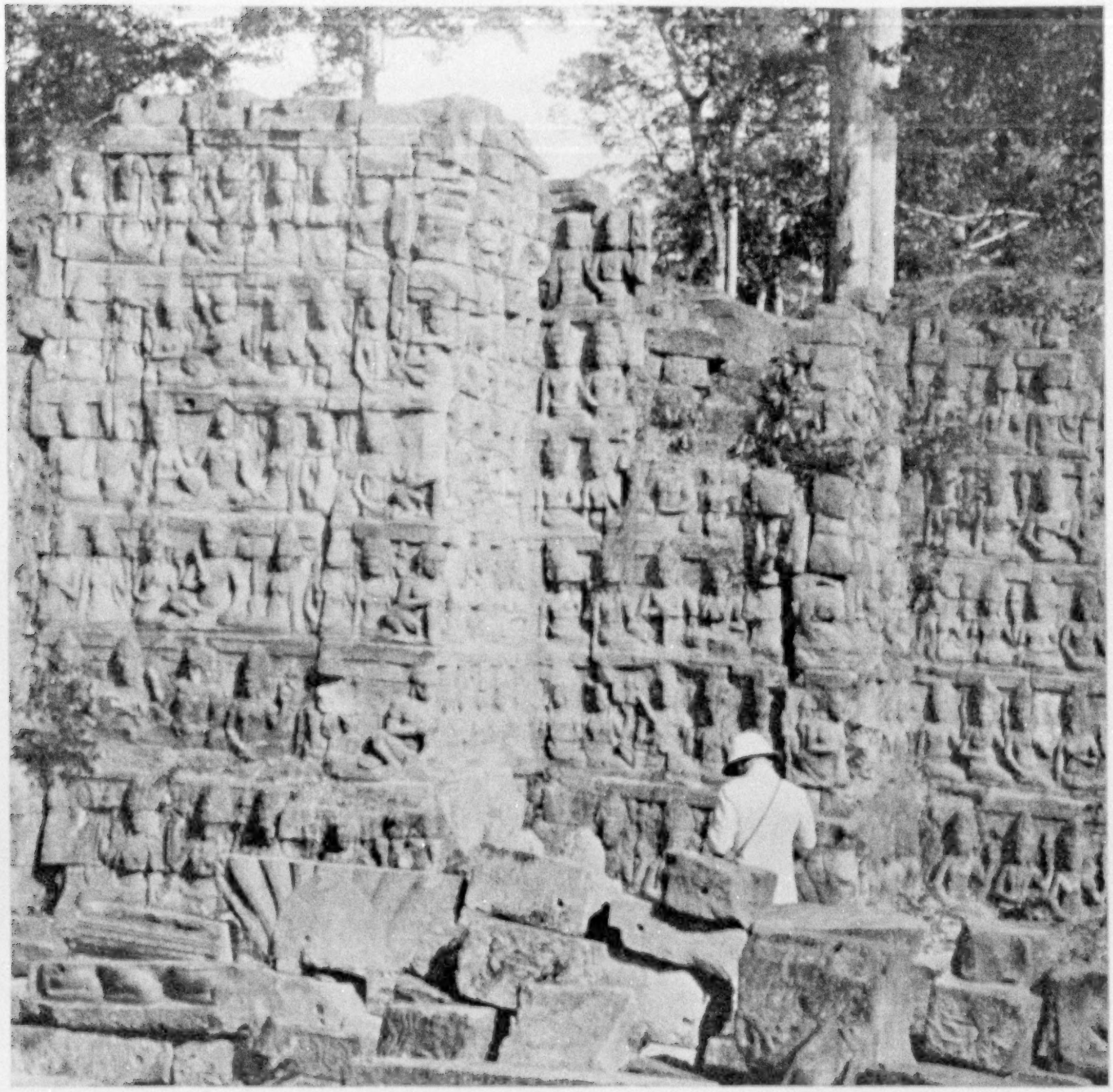
Little enough is known about the origins of the race that evolved the culture which centered in Angkor Thom. The people were called the Khmers and were either of Hindu extraction or the diligent pupils of Hindu teachers. That about sums up the available information concerning them. What became of them is a puzzle much more intriguing than their origin and apparently much less likely to be solved.

There is mention in Chinese records of a kingdom under Hindu direction, if not domination, in Indo-China as early as the year 238 of our era, and there is evidence that the Khmers were still flourishing in the thirteenth and possibly in the early fourteenth centuries; but, strangely enough, their civilization, wonderful as it was, made little impress on the neighboring nations.

It seems impossible that a culture such as that which built the pyramid of Angkor Vat could have perished without a word of its demise reaching the civilizations with which it must have been in constant touch. But such appears to have been the case.

THE WORLD HAD NO INKLING OF JUNGLE-BURIED TEMPLES

Two generations ago the modern world had never heard of Angkor. A dense forest spread across Indo-China. French trade was confined to the coast, and there was no commercial traffic on the Mekong River north of Pnompenh for the reason that Cambodia's resources, the same resources that had given this region a possible identity as the Golden Chersonese of



Photograph by Mrs. Emma L. Rose

FINELY CARVED FIGURES OF INFINITE NUMBER AND VARIETY ADORN THE RUINS OF ANGKOR

legend, were as deeply carpeted with useless verdure as the hidden cities of the north.

Pnompenh, the capital of the Kingdom of Cambodia (western portion of the Indo-Chinese Peninsula), was a village of nipa thatch and bamboo, a comic-opera metropolis, where a despot ruled in fear of his life over a semisavage, if not completely savage, people.

Saigon, the present capital of French enterprise in the East, was just rising from the marshes south of Annam. What might lie hidden in the masses of foliage to the north no one knew. The world had heard, but had forgotten, the tales of Portuguese missionaries of the seventeenth century, that marvelous cities with leaping towers stood dead among the trees of the Tonle Sap. Wherever there is unexplored territory one is certain to hear of such cities, and the world had grown too wise and too skeptical to pay attention to such nonsense.

True, there had been a Chinese traveler, Tcheou-Ta-Quan by name, who had written what purported to be a chronicle of his service as ambassador to some kingdom in the Mekong Valley. It was conceded that the writer might actually have had some such service, but it was obvious that in his description of the marvels he had found in his dubious kingdom he was merely a pleasant liar.

If the Cambodians were to be considered as the heritors of these theoretical

grandeurs, then the lie stood proved; for the world had seen something of Pnompenh, the one aspiration of Cambodia toward civilization, and Pnompenh seemed to be a good deal like every other jungle town on the face of the earth.

During these troublous times M. Mouhot passed up the great river into Tonle Sap and made his discovery.

Archeology, already thrilled by the translation of the Rosetta Stone and the unbelievable bit of detective work which led to the decipherment of the Assyrian cuneiform inscriptions, turned its attention at once to this new field.

The tigers and elephants, which for centuries had made their homes in the forests of the Mekong, suddenly found that the jungle was becoming overpopulated with bearded and bespectacled gentlemen, who wandered about without thought of danger or personal discomfort. They moved northward and left the Angkor region to the savants, and word by word the fragmentary history of the Khmers was pieced together.

The region then belonged to Siam. It was not ceded to France until 1907. But Science declined to recognize any frontier. The galleries of Angkor Vat were cleared of the massed shrubbery. The inscriptions on the walls and pillars of Angkor Thom, all of which were in an alphabet derived from the Sanskrit, were copied and deciphered.

For half a century learned men toiled here unceasingly to prove at length only what had been suspected from the first, that a highly intellectual people had built up in this valley a civilization, and that however inconceivable experience might show such a thing to be, their marvelous culture had been sunk without a trace.

ON THE ROAD TO PNOMPENH

The road to Angkor is interrupted by numerous ferries, most of which are nearing replacement by bridges. A group of rowers takes one across the first arm of the Mekong Delta, a narrow, placid river that is virtually without banks and is distinguishable from the rest of the landscape only by its gray-brown color.

Beyond the opposite terminal a butte, blue-black and hazy, rises out of the green like a volcanic cone—a bare, lone peak that presently is left behind. No other heights are visible for nearly an hour and a half, and then the rising ground that seems almost mountainous as viewed from the distance, turns out to be three jagged little hills that in any other locality might be taken for a slag heap.

Flat and green, flat and green, cane and coconut, banana and bamboo, poinsettia and rhododendron, and rice and rice and rice; and through it all a straight red road—smooth, dusty, interminable.

One crosses the Mekong into a new country. For a while there is a typical patch of jungle land, a tangle of foliage and root and branch, creeping up to the red road and threatening to swallow it. Purple hyacinths bloom in great banks in marshes along the highway. Blue flowers and red and tiger lilies of orange and yellow break in unexpected fireworks out of the green.

CAMBODIA'S CAPITAL IS THE HEIR TO ANGKOR'S GLORY

Siamese temples with elephants' trunks waving from their gables, and spires that rise in a succession of tapering cones appear suddenly in the clearings. Languid birds perch upon the backs of water buffalo, and through all this one comes at last to the ferry, just beyond which is Pnompenh, the capital of Cambodia.

Once, and not so long ago, the journey to Angkor could be made only by boat—a tedious passage that took about five days. The stories of travelers who made the pilgrimage in those days are long recitals of hardship and continuous descriptions of impenetrable jungle.

There is no reason to believe that these accounts were at all inaccurate. But conditions change rapidly in Indo-China. A lace pattern of paved roads has been traced all across this end of Asia.

Motor transport, more flexible and faster than the typical oriental railroad, has brought the upper reaches of the Mekong Valley to within a few hours of Saigon; and paddy fields, spreading out and beyond the old horizons, have pushed the jungle steadily northward.

To-day one may ride for hundreds of miles without seeing any trees save in far scattered clusters, and it was only yesterday that the tiger and elephant walked here, unmolested heritors of the physical kingdom of the Khmers.

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THE TRAVELS OF SAKYA-MUNI ARE COMMEMORATED IN THIS PULPIT

"The hermit of the race of Sakya," better known as Gautama the Buddha, is reputed to have ridden about the country preaching the doctrines of his new-found truth. In remembrance of this, some of the Cambodian *bonzes*, or priests, teach their *chelas* (neophytes) from a pulpit built in the shape of a horse.

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NAGA RADIATES GRACE AND POWER

The great serpent demigod was deeply venerated by the founders of Angkor as the parent of their race. The vibrant strength and beauty of his sculptured image are among the highest achievements of Khmer art.

Autochromes by Gervais Courtellemont

CAMBODIAN BUNGALOWS ARE BUILT ON STILTS

The primary reason for placing nearly all habitations several feet above the ground is to avoid their destruction in the flood season. However, the practice also safeguards the homes from snakes.

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IN THE SILKWORM NURSERY AND INDUSTRIAL SCHOOL AT PNOMPENH

The French Administration in Cambodia is endeavoring to revive the native arts and industries of that colony. At the left a Cambodian girl is handling cocoons preparatory to their conversion into silk thread. At the right the silk yarn is being wound.

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THE TOWERS OF ANGKOR VAT REFLECT THEIR ANCIENT MAJESTY IN STILL WATERS

A mile south of the ruined royal city of Angkor Thom rises this most perfectly preserved example of Khmer art and architecture, surrounded by a moat of lakelike proportions (nearly 700 feet wide and with a perimeter of more than three miles). It was begun about the middle of the 12th century and was probably finished by the beginning of the 13th. The shrine has served at various times as a place of worship for followers of both Brahma and Buddha.

Autochrome by Gervais Courtellemont

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THE MONUMENTS AT ANGKOR DRAW ONE IRRESISTIBLY BACK INTO THE VAGUE MYSTERIES OF THE PAST

This is one of two buildings in the first great court of the Vat. They have been called libraries, but were more probably chapels.

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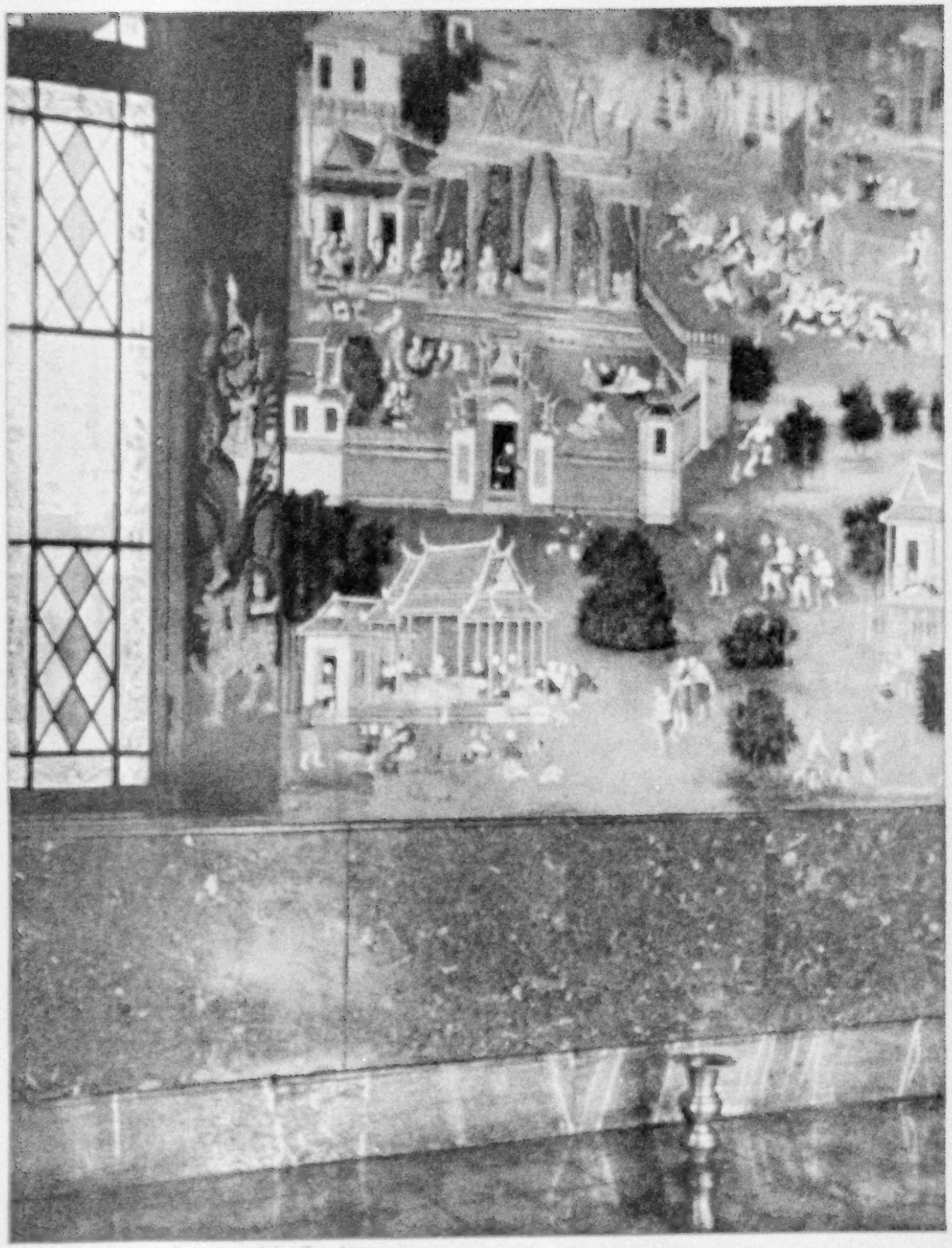
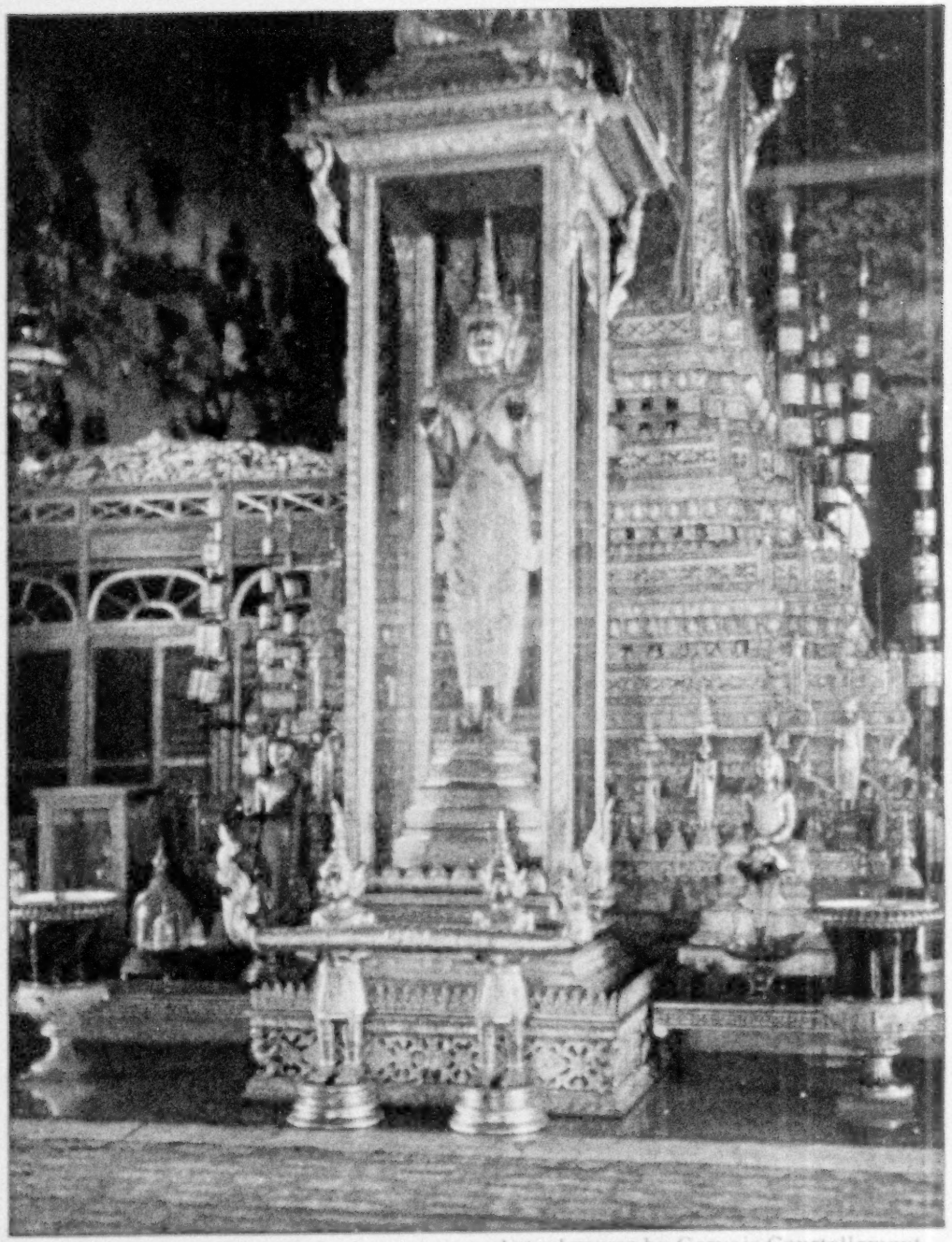
A CAMBODIAN PRIEST READS ONE OF HIS COUNTRY'S CLASSICS

Autochromes by Gervais Courtellemont

THE WEDDING GOWN OF A PNOMPENH WOMAN OF FASHION





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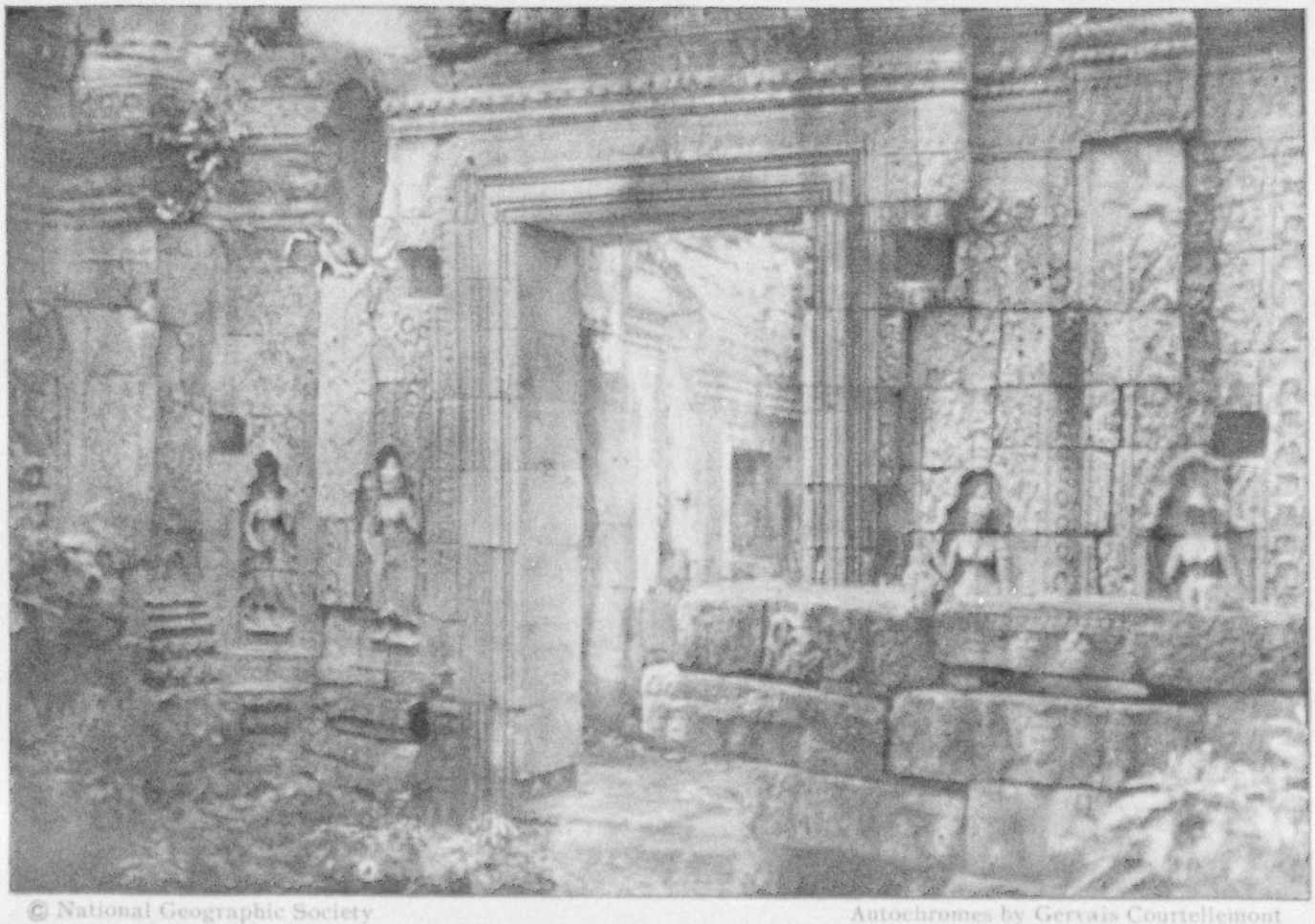
INTERIOR VIEWS OF THE FAMED SILVER PAGODA AT PNOMPENH

Into this gorgeous temple, kings of Cambodia have poured an enormous treasure. Its main room, 36 feet wide by 120 feet long, is paved with tiles of silver. The high walls are frescoed in brilliant colors with scenes from the life of Buddha and vivid representations of the horrors of hell. The most notable possession of the pagoda is a golden image of the Buddha, six feet high and ablaze with diamonds.

AN ANCIENT NAGA STILL REARS ITS PLURAL-HEADED BULK AT ANGKOR THOM

According to legend, the Nagas, or many-headed serpents, were the original lords of Cambodia (see also Color Plate II). This god is supported on the knees of a succession of carved Brahman divinities and has withstood the ravages of time and strife better than most of his fellows.



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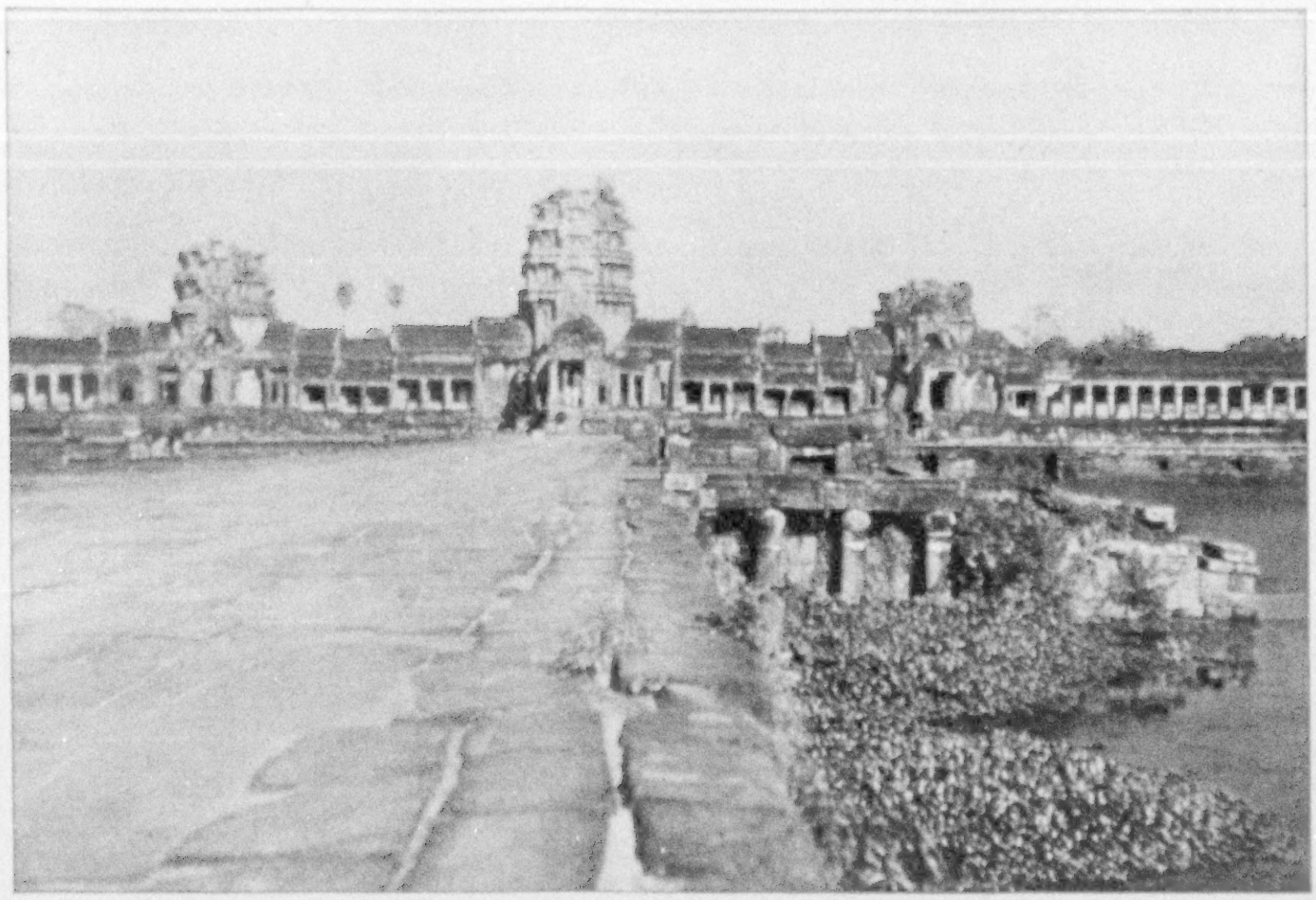
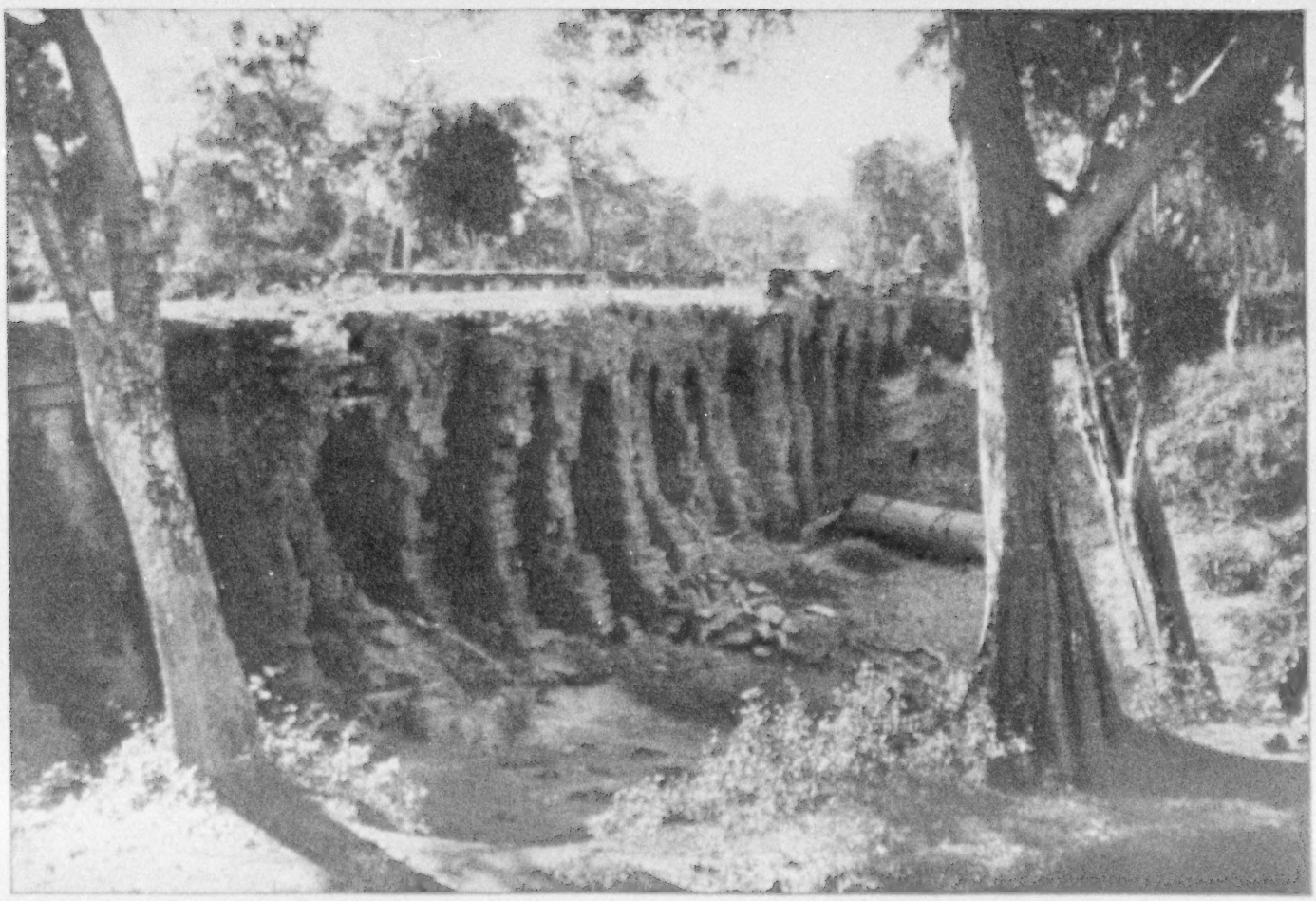
IN THE HEART OF CAMBODIA'S JUNGLE WERE BATHS TO RIVAL ROME'S

The great Khmer king, Yaçovarman, who came to the throne, A. D. 889, built at Angkor Thom a city which could vie in magnificence with anything that Europe has produced. The royal baths, marvels of beauty and luxury, were decorated with Brahmanic figures.



IN ITS HEYDAY ANGKOR WAS LARGER THAN THE ATHENS OF PERICLES

The ancient capital of Cambodia presents a vast area of temples and palaces whose grandeur of conception and beauty of decoration grip the imagination and claim for themselves and their builders a secure niche in the world of art.



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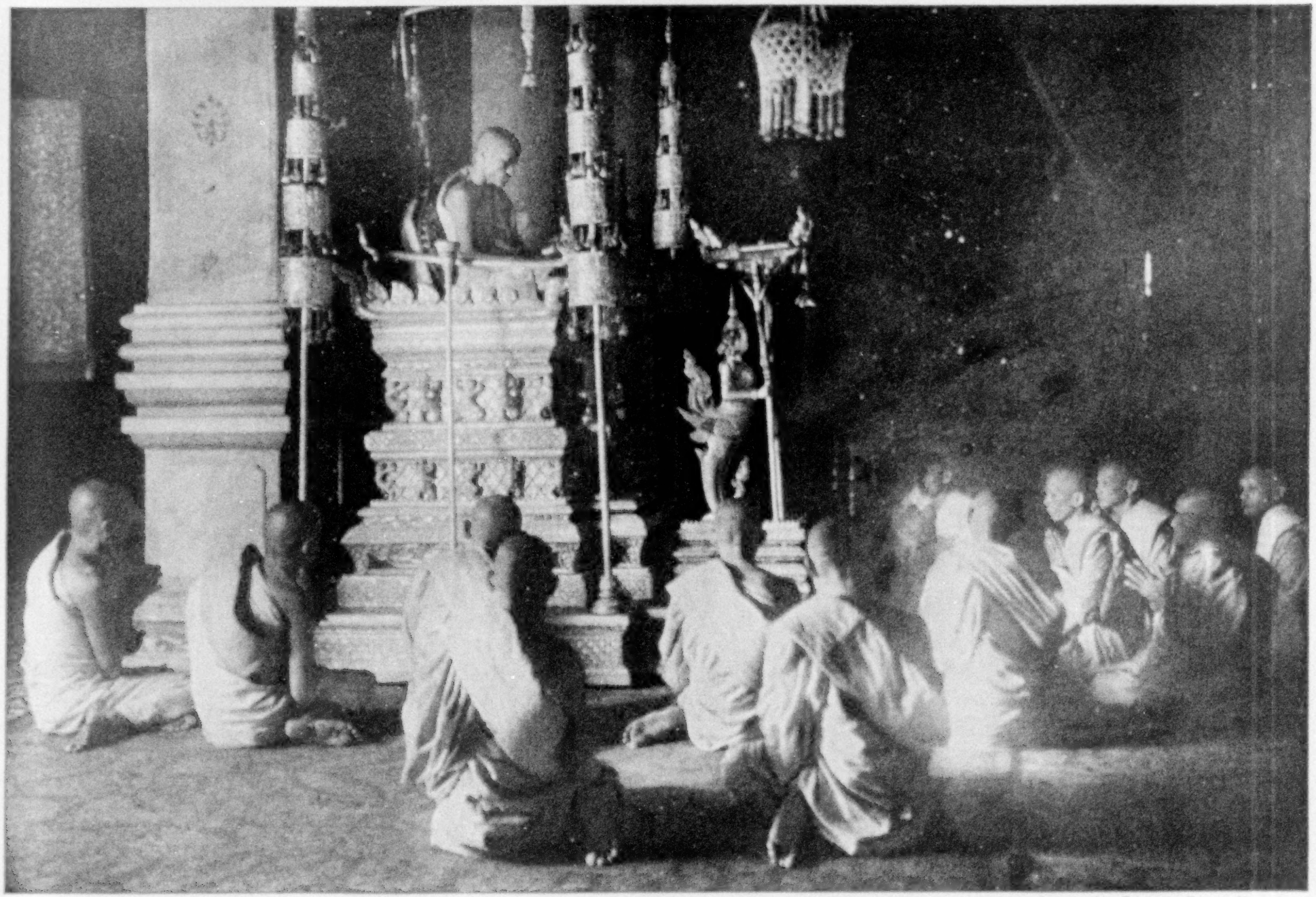
SEVEN CENTURIES AGO THE KHMERS BUILT THIS BRIDGE OF STONE

The principle of the arch was unknown to the architects of Angkor, consequently they had to place the piers of their bridges very close together and so much silt has collected against these supports, just outside the ancient capital, that they have practically become a wall.



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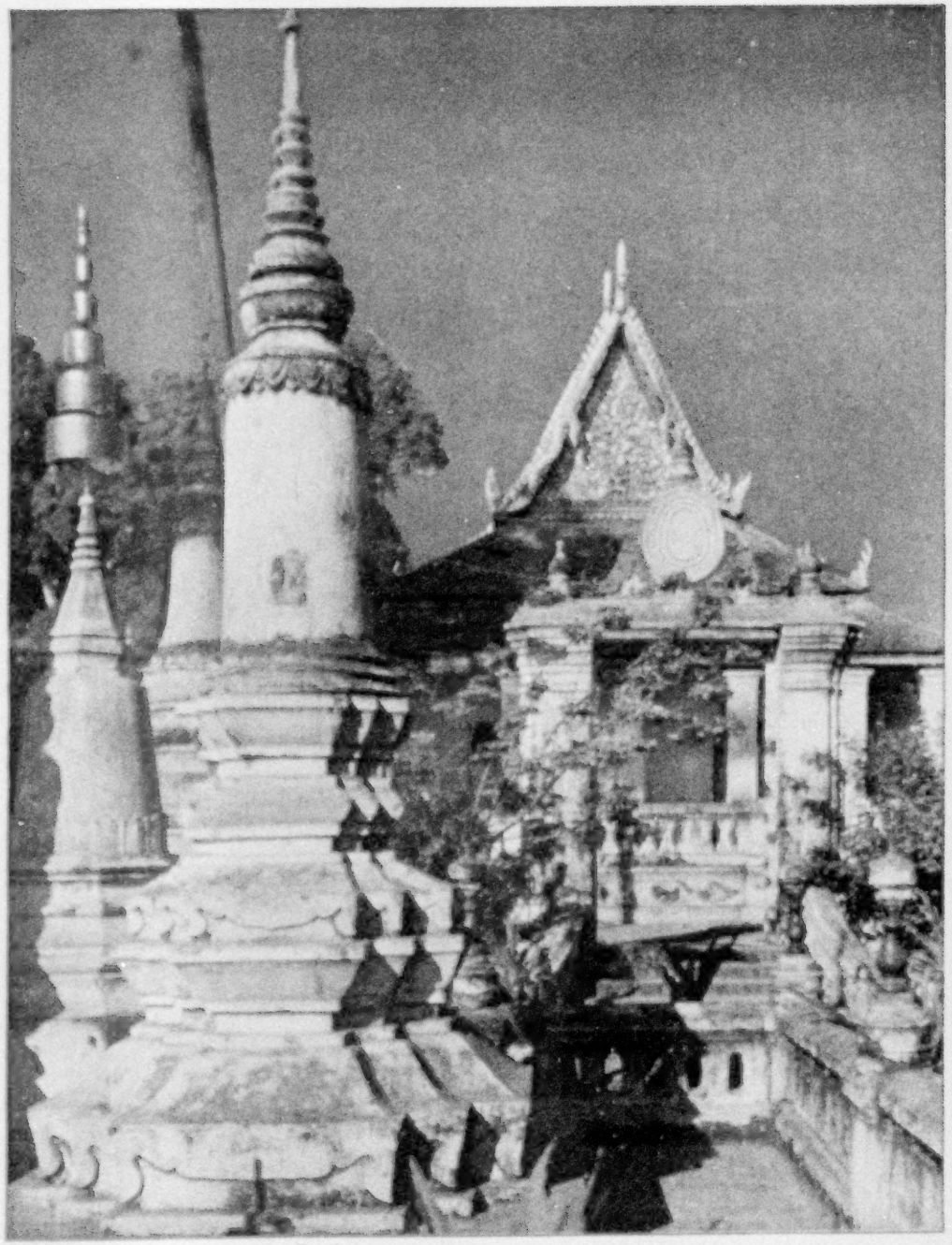
HERE THE BROTHERS OF THE SAFFRON ROBE DO HOMAGE TO THEIR GOD

The sermon or lesson is read by one of the bonzes while seated in a beautifully carved pulpit. The congregation is composed of men attached to the Royal Pagoda at Pnompenh, who have in their care treasures of great value. The relics are kept in glass boxes which are not locked but sealed with paper and stamped with the royal mark. This procedure serves as a most effectual safeguard, for no Cambodian, regarding his king as the representative of God on earth, would ever dream of stealing from him.



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THE DELICATELY SCULPTURED SPIRES OF PALACE AND PAGODA PRESENT A FANTASTIC HARMONY AGAINST THE AZURE OF PNOMPENH'S SKIES

Little remains to Cambodia of the glory that was hers when the Khmers ruled a great empire stretching from the Bay of Bengal to the China Sea, but the artistry of her religious edifices still breathes memories of those ancient days.

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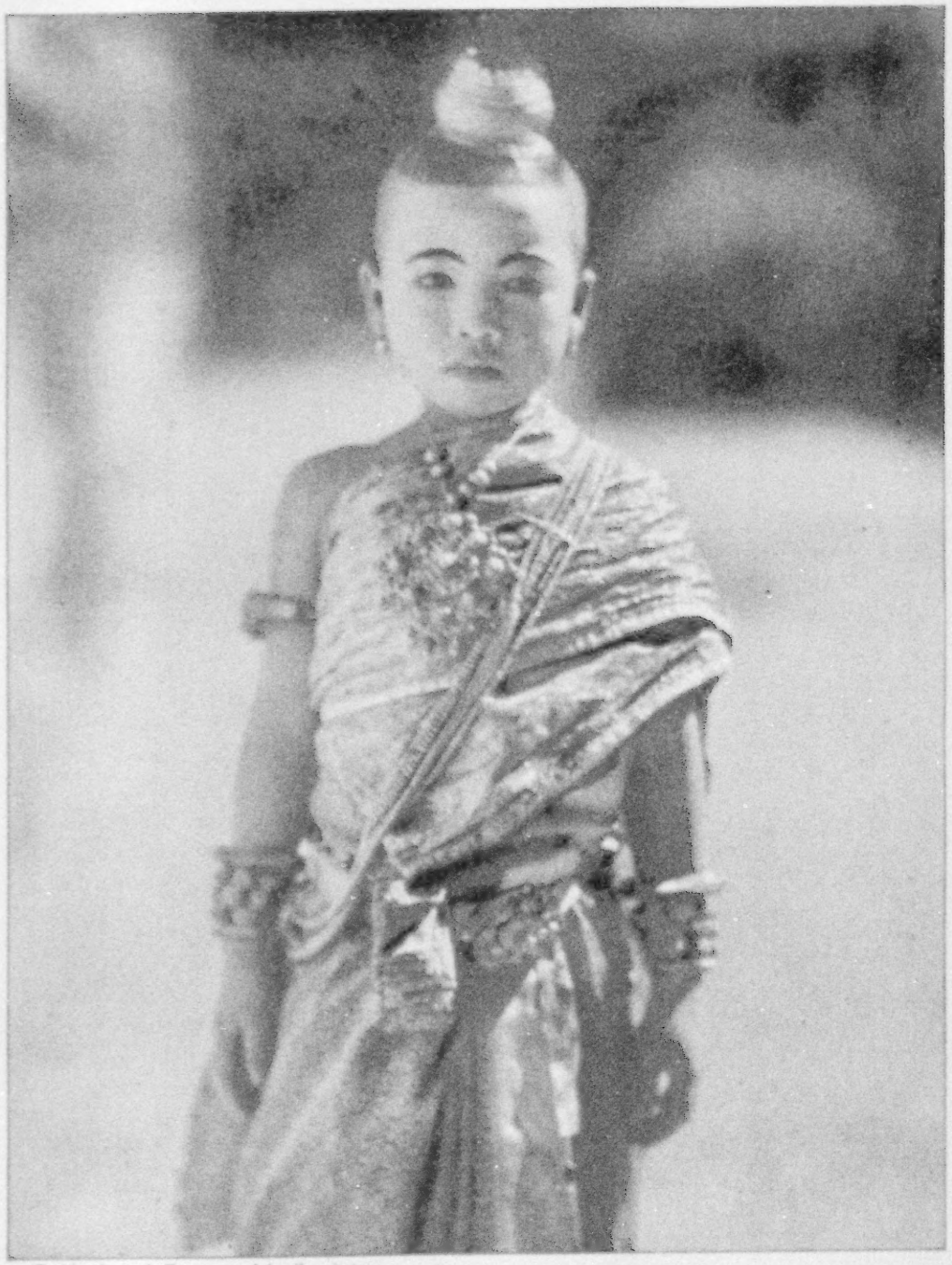
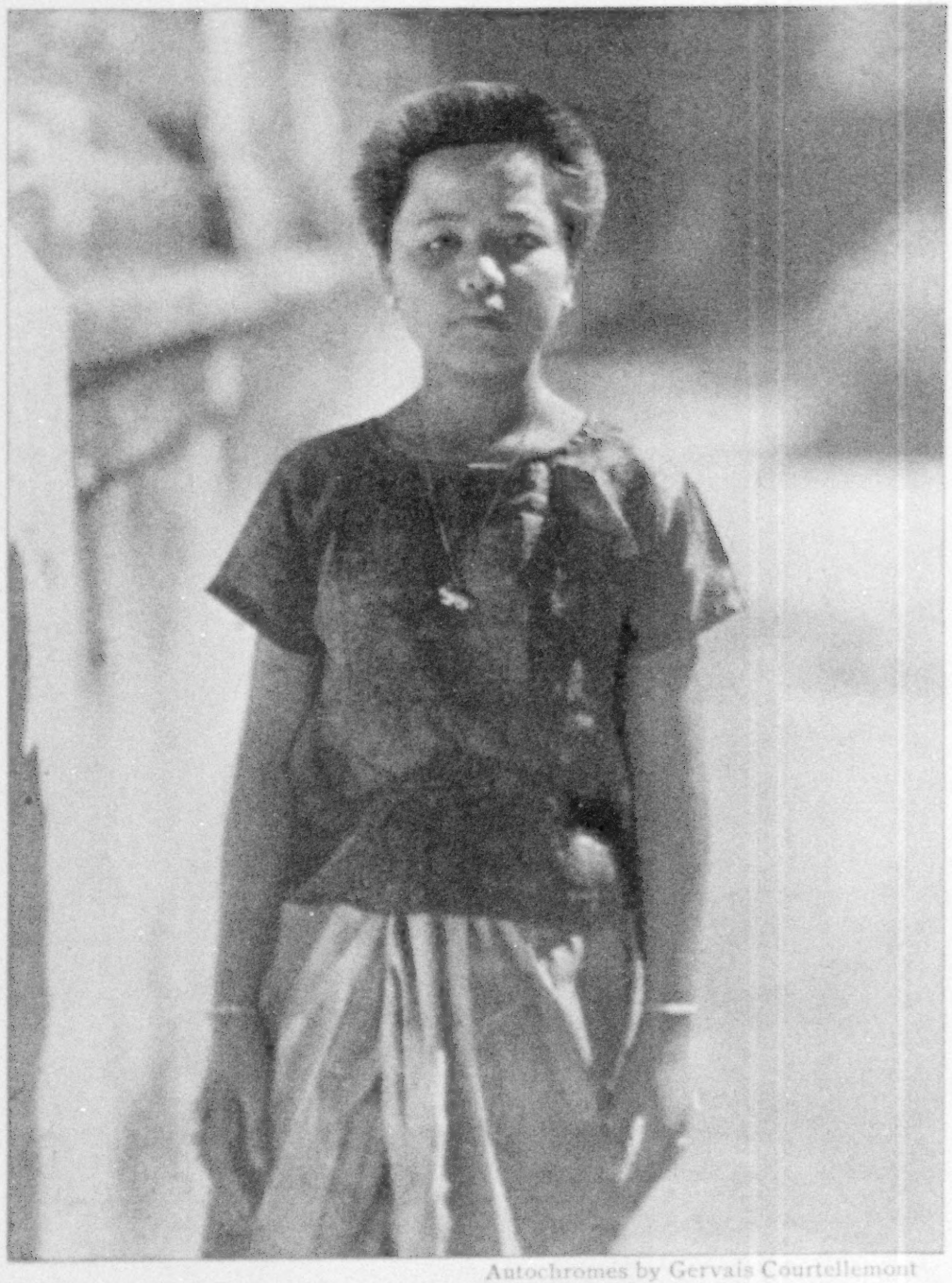
THE BALLET DANCERS OF CAMBODIA ARE INCARNATIONS OF RHYTHM

In a state-maintained ballet school at Pnompenh, graceful girls learn to perform the delicate and intricate steps that accompany symbolic dances which still adhere to the classic examples depicted on the walls of Angkor. The "King of the Monkeys" is here seen preparing to elope with an unprotesting young princess. Notice the whiteness of the dancer's face and arms, an effect obtained by generous applications of powder.





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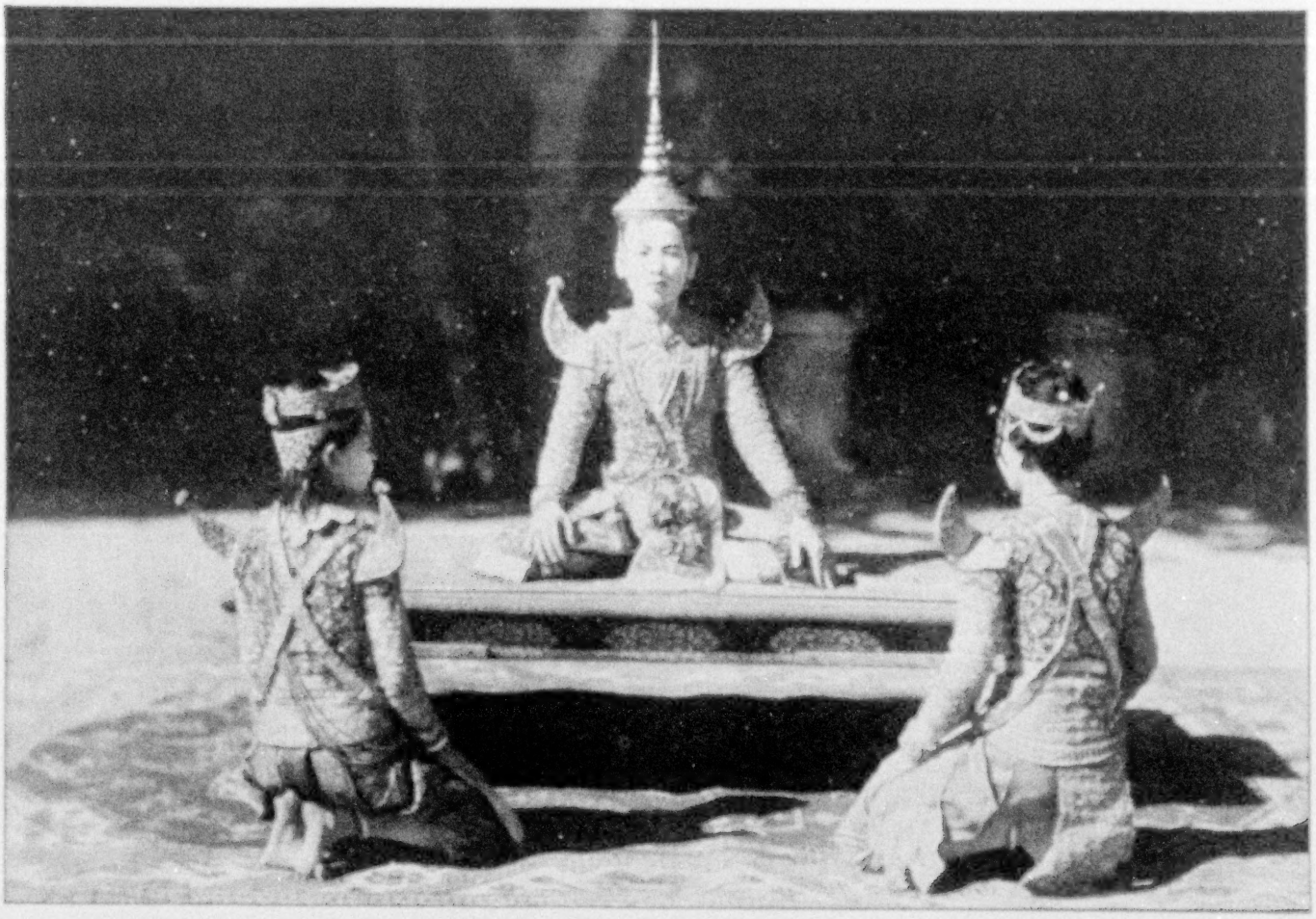
LADIES OF THE ROYAL COURT AT PNOMPENH

The girl at the left is dressed in finery for the ceremony of hair cutting which will formally mark her transition from girlhood to womanhood. As a child only a single tuft of hair has been allowed to grow on her head. This is inclosed in the small gold bowl she wears. When the tuft is cut off, all the hair is allowed to grow out. The woman at the right is clad in everyday costume and her hair represents the regular "Cambodian bob."



THE KING OF CAMBODIA IS A LIBERAL PATRON OF THE DANCE

Dancing has long been an honored institution among the Cambodians. Their classic dances combine dramatic effect with grace of movement. The most beautiful girls of the upper classes are especially trained to perform for the king.

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FRENCH AND CAMBODIAN JUSTICES SIT SIDE BY SIDE

The law is administered in the capital city by a mixed tribunal. Native magistrates predominate in numbers, but the voice of the French representative is a potent one. The fresco behind the bench depicts the traditional figure of justice.

THE ANCIENT ARTS ARE STRUGGLING TO SURVIVE

The elaborate ceremonial masks used in dances representing phases of Cambodian mythology and religious belief are now made in the industrial school at Pnompenh fostered by the French (see also Color Plate III).

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CROWNS RESERVED FOR OCCASIONS OF STATE

Uneasy, indeed, lies the head that wears such crowns. Fortunately for Cambodian royal comfort, however, they are articles of ceremonial dress and are not worn every day. Both the crowns and swords are ancient.

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THE SELF-STYLED "KING OF ANGKOR"

This demented Buddhist priest has convinced himself that he is lord of all he surveys at the ruined capital of the Khmers.

Pnompenh, where seven-headed cobras guard the bridges and spires of gold and stupas of stone rocket out of the greenery and into a vivid blue sky, is the reliquary of the culture that was Angkor.

There is a fascination about the city that one does not realize from the descriptions of it given by casual travelers, in the days when the boats of the Messageries Fluviales were the only transport to the north.

It is a town of wide, well-shaded streets, clean, white buildings shining in the sun, a royal palace, a pretty park, and a vast and pictureful array of markets; but to the traveler who has come here after a long trip down the Chinese coast it is something else—it is an expression of a people.

ANCIENT ARTS OF THE KHMERS ARE BEING REVIVED

Pnompenh seems to lack the occidental atmosphere of the Chinese treaty ports. It is *sui generis* and its parklike avenues are places of continuous surprise.

True, there is plentiful evidence here of French influence. If the legends are true, the old capital of Cambodia was merely a haphazard enlargement of the usual nipa village. That it is a city to-day is due, of course, to the directing energy of the "elder brother," who stands not too well concealed behind the gilded throne of the puppet king. But with French impetus, French artistry is to be found here, as elsewhere in Cambodia, the more remarkable because unobtrusive.

The Cambodian museum of Pnompenh is as much a part of Angkor as the ruined cities of the Khmers. M. George Groslier, one of the foremost authorities on the history of Angkor, has served for many years as its curator, and it has become the principal source of information concerning the antiquities of Indo-China.

A distinct effort has been made to revive the ancient arts of the Khmers. The Cambodian dances, through which the poesy, not to say drama, of the Khmers has been kept alive, are enacted here by troupes of young women whose training for their task is begun in babyhood (see Color Plates XII and XIV). Manual-training classes are conducted in connection with the museum, and there the casting of bronze statuettes and the weaving of the old Cambodian patterns and fabrics are taught to the people who should have inherited the glories of Angkor (see Color Plates III and XV).

The town itself is filled with hundreds of open-faced shops operated by Cambodians for Cambodians. Men and women in sarong and pajamas stand in them as proprietors and clerks. Other men and women, similarly attired, come all day long to haggle over purchases.

The streets are littered with itinerant food shops, where half-clad chefs roast bananas over charcoal braziers or ladle flaky rice out of the steam pots of portable stoves.

Women walk the water front—strange women, with betel-stained teeth and close-cropped hair (see Color Plate XIII), who can be distinguished from the men only by their superior grace of carriage. Like the men, they wear the sampot, a sarong caught up diaperwise between the legs and knotted at the belt, and their faces are as hard and masculine as they were in the legendary days when the females of Cambodia turned a tide of battle against the Thais and earned the right to ape the dress and appearance of warriors.

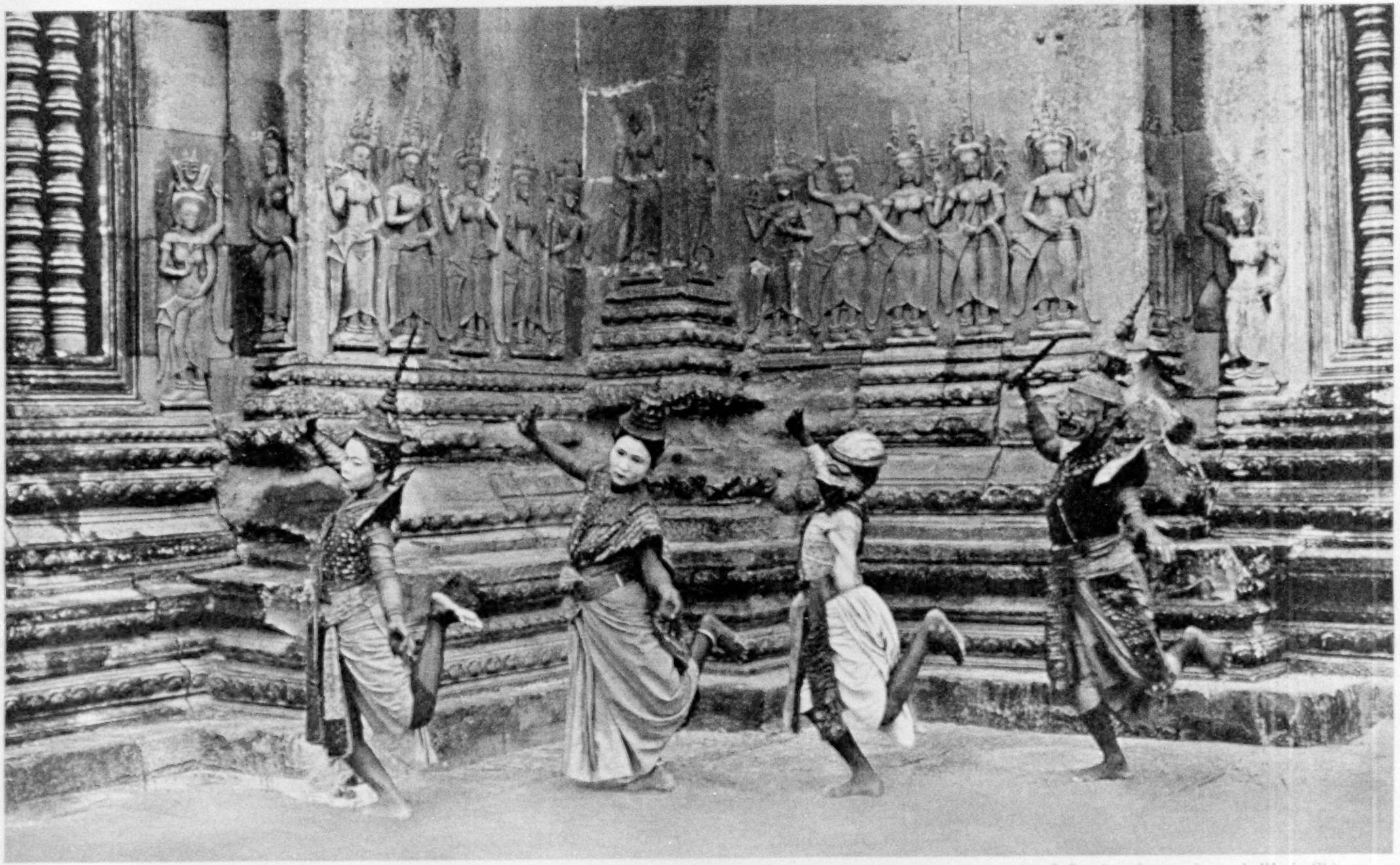
There are hundreds of Buddhist priests here. In bands they journey across the town, trailing the flame of their yellow robes through the twilight of the shaded streets.

By day the capital is Cambodia in panorama. By night one lies awake listening to the heartbeat of tom-toms, the plaint of pipes, and the weird melody of the bamboo xylophone, as the spirit of the Khmers is conjured out of the dead ages by the necromancy of unseen dancers.

THE MEKONG IS ANOTHER NILE IN ITS GIFT OF FERTILITY TO ITS VALLEY

One sets out from Pnompenh in the dawn to resume the journey through the rice fields across a flat and fertile land, as productive a land, probably, as is to be found anywhere on the face of the earth.

Small wonder that this valley propagated a wealthy and powerful civilization. The Mekong is another Nile, but in its territory a greater Nile. Cambodia is another Chaldea, but more fecund. And history is a singularly unimaginative workman. What it has done in one place it repeats in another.



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CAMBODIA'S ROYAL DANCERS PRACTICE THEIR ART IN THE SHADOW OF ANGKOR'S CRUMBLING GLORY

Photograph by Services Economiques de l'Indo-Chine

SAMPAN DWELLERS OF PNOMPENH

Many of the inhabitants of the Far East's waterways seldom set foot ashore. Nearly their whole life is passed aboard their floating homes. The babies are equipped with pieces of bamboo, tied about their waists, to keep them from sinking when they fall overboard. Ducks have long strings attached to their legs so that they may swim and fish, but not take unbidden leave.

Photograph by Services Economiques de l'Indo-Chine

HE CONVERTS BUFFALO HIDES INTO SANDALS: A COBBLER OF INDO-CHINA

© Services Economiques de l'Indo-Chine

A LONG AND ARDUOUS TRAINING IS NECESSARY TO MASTER THE INTRICACIES OF THE BALLET

To qualify for the Royal Corps de Ballet in Cambodia a girl must be a dramatic artist as well as a proficient dancer. Old ballerinas who have outlived their dancing days apply the science of make-up to their successors.

Photograph by Services Économiques de l'Indo-Chine

DISCIPLES OF THE DANCE BEGIN THEIR TRAINING EARLY

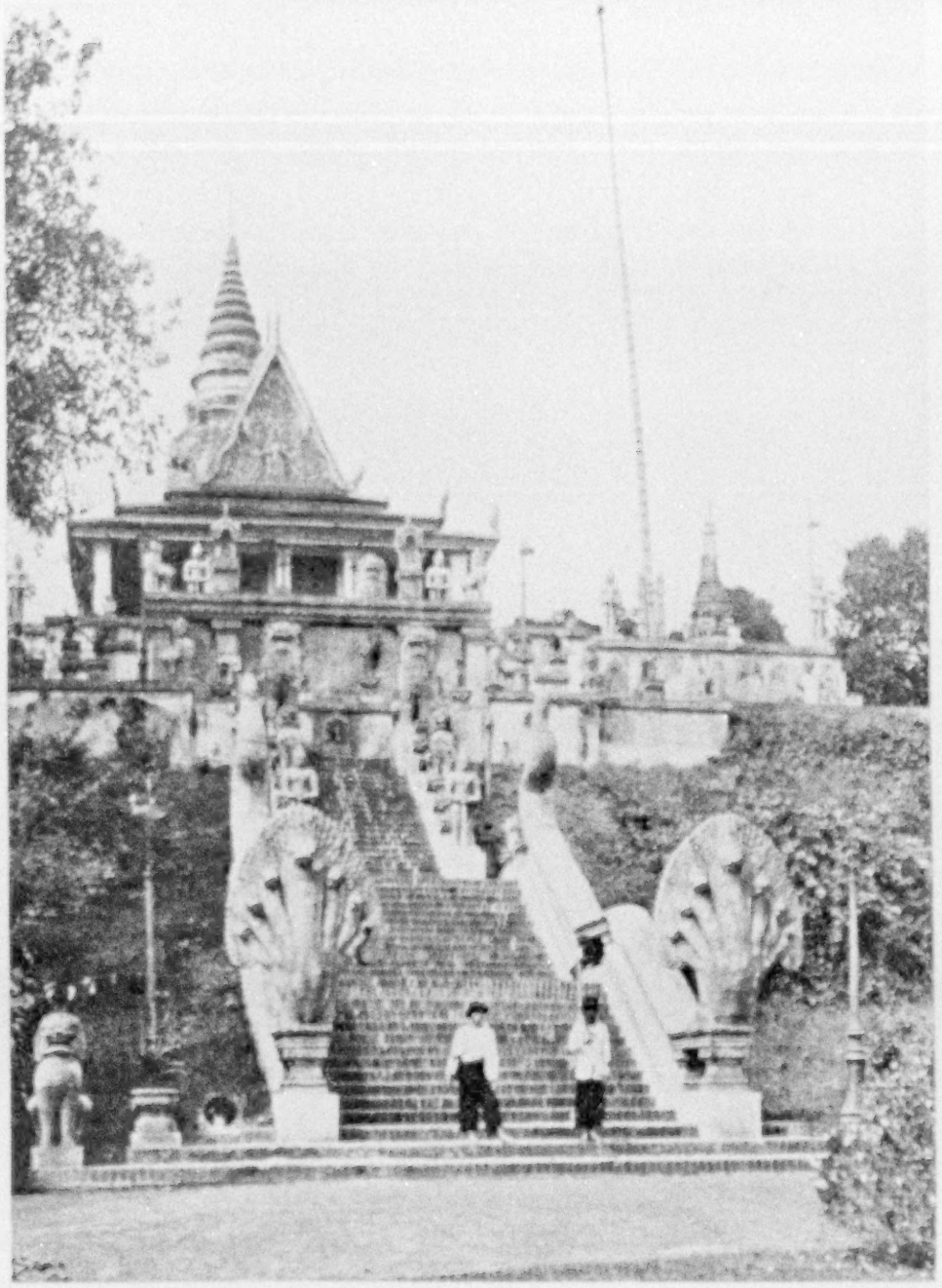
In order to attain the lithe and supple muscular development required for their difficult dances and symbolic contortions, the court dancers begin their course of instruction when very young girls.

Even without second sight, one senses the presence here of the millions who are gone. Once they stood out there in the paddy fields as these newly arrived Cambodians are standing, laying out irrigation ditches in the same pattern, transplanting the rice shoots with the same laborious hand process, plowing with the same old wooden plows, and wearing the same negligible scraps of clothing.

The ancient realm of King Kambu gets no older. Here, in the rice marshes, it has been restored again as Siva, its destroyer god, was said to restore the crops of the harvested fields. In a moment the men and women of the fields will be leaving their work, dropping their sickles and wicker sieves to take the road in a pilgrimage to Angkor, as they journeyed in that forgotten existence when Siva was younger.

ANGKOR VAT AT SUNSET

Beyond a bank of water lilies in the still moat, beyond a cloistered wall that seems to have neither beginning nor end, the great bulk of Angkor Vât drives its stone wedge into the sky (see Color Plate IV). A pilgrim looks upon it through misty eyes and with an odd constriction of the throat, for there is only one Angkor Vat. There is no such monument to a vanished people anywhere else in the world.



NAGAS GUARD THE APPROACH TO PNOMPENH'S PRINCIPAL PAGODA

An excellent view of the city may be obtained from this temple, which crowns an eminence of about 80 feet. One of the city's most popular and beautiful parks surrounds it.

The sun is setting now, and the gold has come back to the minarets. The lacework of carved rock is fragile as cobweb in the gathering shadow, and with the half light of early evening the central pyramid has taken on an awe-inspiring size. It seems futile to record its grandeur. One does not describe an Angkor. He sits and gazes at it in silence and amazement.

The name Angkor has been somewhat loosely applied to these ruins. There are two principal groups: Angkor Vat, the temple and Angkor Thom, the town. The word Angkor is believed to be a native corruption of the Sanskrit Nagara, meaning capital. Thom is a local word, meaning great or grand. Vat is an appellation designating a temple and is generally associated with Buddhism.

Angkor Vat was the last important work of the Khmers and remains to-day the finest expression of their peculiar art. Built as a shrine to Hindu gods and apparently devoted to Vishnu, Siva, and Buddha in turn, it has departed a long distance from the parent architecture of the Hindus. It is a step pyramid which rises through three cloistered stages to a group of five miterlike towers, of which the one in the center is dominant.

The temple area is about a quarter of a mile square and is surrounded by a moat and a high wall. A causeway crosses the moat and strikes through a gate pierced in the middle of the western wall, whence it leads to the portico of the first stage. The lower galleries measure nearly 250 feet on a side. The façade is five times as wide as that of Notre Dame of Paris.

It is the history of Angkor Vat that no beholder can judge accurately how high it really is. The towers are loftier than the tallest palms of the jungle, but they are lifted still higher by tricks of perspective that form the most interesting part of their design. In the mass, Angkor is as impressive as the Pyramids of Egypt, more striking as an artistic ensemble than even the Taj Mahal. But it is not for these attributes that the dazed pilgrim

would classify it as the most fascinating place in the world.

The sun has vanished. The last trickle of gold is gone from the carved façade. A cloud of birds has come out of the forest and is sweeping across the face of the central pyramid. The towers are wrapped in silence and loneliness, and one realizes that whatever science has done to trace the origins of Angkor, its major mystery remains, grim and unsolved.

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A LIVING COUNTERPART OF ANGKOR'S SCULPTURED DANCERS

Every position assumed by the Cambodian dancer, every motion of her body, is of symbolic significance in her performance. Note the peculiar positions in which the fingers are held.

SIVA THE DESTROYER LEERS DOWN UPON THE WORLD

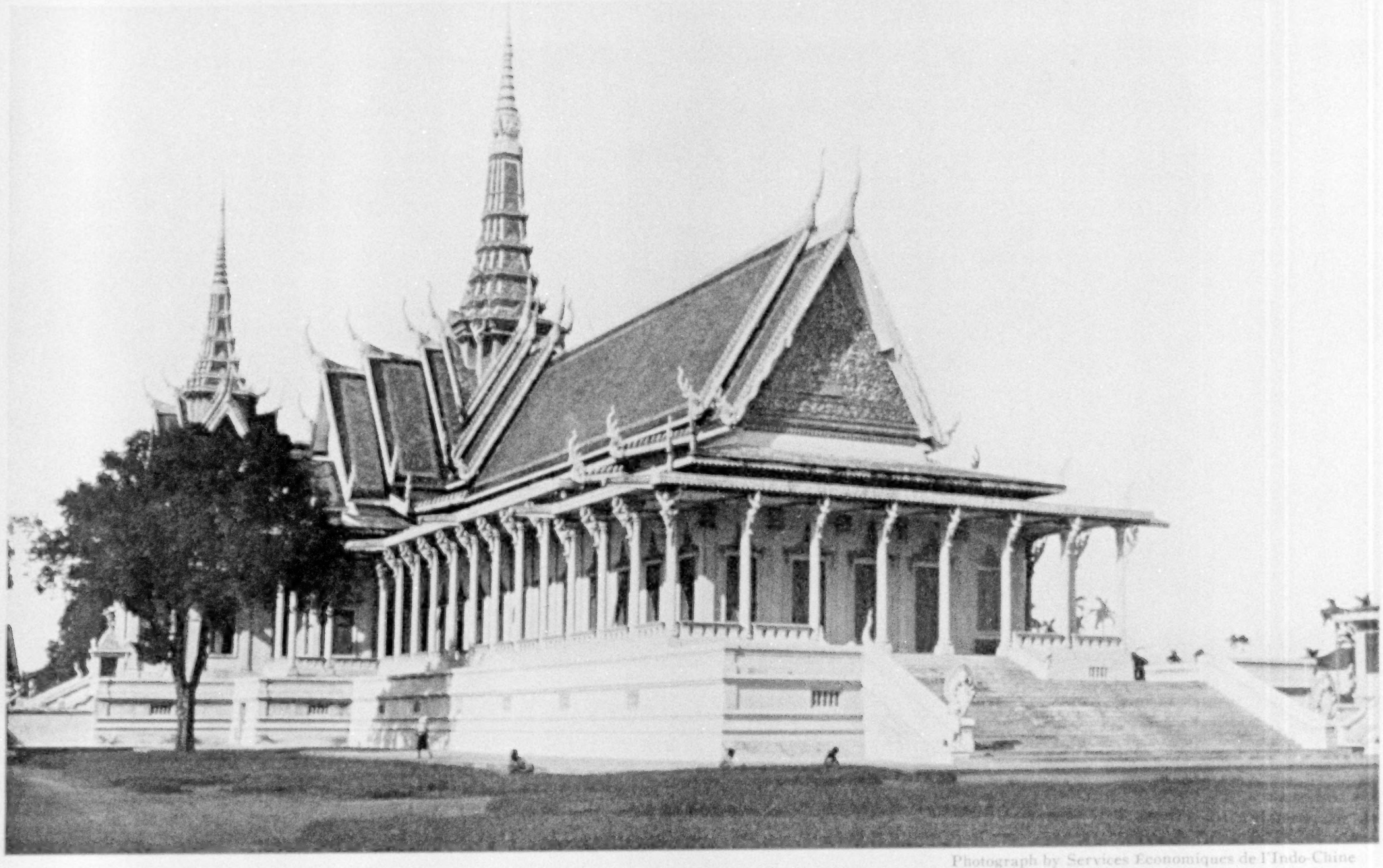
About two-thirds of a mile to the north of the temple one comes to the wall of Angkor Thom, where the seven-headed Naga, legendary deity of the Khmers, is upheld in the arms of stone giants to form a balustrade for the entering causeway. Access to the old capital is through a tower, from each of the faces of which a head of Siva the Destroyer leers down upon the world.

Inscriptions show that Yaçovarman, the King of Glory, who ruled the Khmers from 889 to 908 of our era, built the city. He moved his court to the royal terrace of Angkor Thom within ten years after work had started on its walls.

It is one of the most pretentious capitals of antiquity. Its walls, most of which are intact to-day, measured nearly two miles on a side, and it contained a temple, the Bayon, which was almost as large as Angkor Vat.

Siva the Destroyer was the patron deity of this capital. His four faces are to be seen in each of the fifty towers that rise from the battered hulk of the Bayon, and even a god of chaos must be satisfied with the scene of desolation which his leering masks survey.

The more one sees of the works of the Khmers the more he wonders where they went and what became of them. He can trace the flight of the old gods with the coming of Buddhism. He can readily see in the survival of that religion in Cambodia a remnant of Khmer thought if not of Khmer culture. He can be convinced that the present-day dwellers in Pnompenh are the physical descendants of the men who built Angkor. But



Photograph by Services Économiques de l'Indo-Chine

MODERN CAMBODIAN ARCHITECTURE STILL REFLECTS A SPARK OF THE GENIUS OF THE KHMERS

The Royal Palace at Pnompenh is not one structure, but a series of buildings surrounded by a rectangular wall. This is the Throne Hall and is among the parts of the palace inclosure open to visitors.

Photograph by Services Economiques de l'Indo-Chine

THE ROYAL ELEPHANTS PROMENADE IN FRONT OF THE PALACE

Although the King of Cambodia now has a fine motor car in which to travel about, he still maintains a number of elephants for use on state occasions. The great beasts lend a distinctly oriental color touch to his court at Pnompenh and are a source of never-ending delight to the capital's populace.

Photograph by Services Economiques de l'Indo-Chine

THIS FEARSOME-LOOKING CONTRIVANCE IS BEARING A WELL-TO-DO ANNAMITE ON HIS LAST EARTHLY JOURNEY

this seems to complicate rather than solve the mystery.

There are three theories regarding the collapse of the Angkorean civilization.

The first holds that the Khmers, after long warfare with the Thais, a coalition in which the Siamese were an important factor, were defeated and driven out of their capital. This, however, does not explain why, having been driven out, they failed to return, or why the conquerors, having taken the finest city in Asia, neglected to keep it.

The second theory would have it that a plague eliminated thirty million Khmers with efficiency and dispatch; but that, too, is an inadequate explanation, inasmuch as no traces of human remains or human accouterments have been found anywhere about Angkor.

The third, which has the support of M. Groslier, is that the slaves, who must have constituted a large portion of the population, if such works as Angkor Vat are to be taken as any indication, revolted and destroyed the intellectuals. And this seems reasonable enough. With the teachers gone, it would be natural enough for the remainder of the population to lapse into savagery, as the Khmers undoubtedly did.

The inscriptions themselves give little hint of the dénouement of the tragedy. They go on recording the exploits of kings well up into the thirteenth century, and then they trail off into the shadows. The history of the Khmers drops back into the silence from which it so slowly emerged, and nothing remains but vast, empty halls and tall, crumbling towers and the eternal question, Who were these people?

M. Pierre Dupont, of the French road engineers, came out of the bungalow hotel on the west side of the moat and stood for a moment in the moonlight.

"Do you remember the *Marie Céleste*, Monsieur?" he inquired at length. "You have heard of her, of course, and how she was found on a calm sea with all sail set and the table spread and a fire going in the cook's galley and not a soul on board.

"Well, to me, Monsieur, Angkor is another *Marie Céleste*. There stands the temple, just as it was when the Khmers walked out of it. One might expect to find the altar fires still burning.

"It is not a ruin. The roofs still turn the water and the galleries are just as they were hundreds of years ago; and yet we know that a whole people deserted it."

And that seems to epitomize the mystery of Angkor. It is not a question of who built it, but of why it was left to the malevolence of the jungle.

GENOA, WHERE COLUMBUS LEARNED TO LOVE THE SEA

By McFall Kerbey

Author of "Toilers of the Sky," in the National Geographic Magazine

With Frontispiece in Colors, "Fate Directs the Faltering Footsteps of Columbus"

EVERY American who visits Italy, it seems to me, should enter through Genoa, pausing in that splendid old city, once mistress of all the known seas, to pay reverent homage.

For Genoa may be considered the Alma Mater of the Americas. She nurtured Christopher Columbus in his boyhood years, when he dreamed the dreams that were to shape his life; communicated to him a love of the sea that had made her great; imbued him with a dominating thirst for the adventure that was hinted at by every strange galley and caravel that crowded her harbor, and all the motley throng of bronzed seamen from distant lands who jogged elbows with him on her quays.

And, having reared the boy Columbus in this atmosphere, the city sent him forth to battle with true Genoese spirit for his dreams until that October day in 1492 when, fulfilling them, he wrung a hemisphere from oblivion to add it to the map of the world.

What more appropriate way could there be for an American to make the acquaintance of Italy than in treading here in the footsteps of the Italian we know best, the first ambassador from Europe to America and the one with the most pregnant mission?

A PROSPEROUS MODERN CITY STRONGLY LINKED TO THE PAST

The Genoa of to-day is a great modern city, if you center your attention on its industries, on its steel ships, on the dwellings of its upper tiers, on the business of the Via Venti Settembre (20th of September Street), and the crowds of prosperous-appearing, well-dressed people who throng that thoroughfare morning and evening to holiday proportions.

But Genoa is not only a modern city. The links that tie the present to the times of Columbus, and to days long before his, still hold strongly. One may step on the very stones on which young Christopher walked; the walls that rose beside the narrow ways that his restless young feet trod still stand, block after block of them; and only a few steps from the present business heart of the city, where beautiful modern buildings rise about the Piazza De Ferrari and the Via Venti Settembre starts upon its broad, straight way, is the most important link of all, the House of Columbus.

WHERE YOUNG COLUMBUS LIVED AND PLAYED

This dwelling of Domenico Colombo, father of the future Admiral, and of Susanna, his mother, was the place in which Christopher spent his early boyhood. Most tourists must view this historic old house from the outside; but when the municipal authorities learned that I was seeking information of Columbus in his home town for the National Geographic Society, the very pleasant suggestion was made that I be conducted through the building.

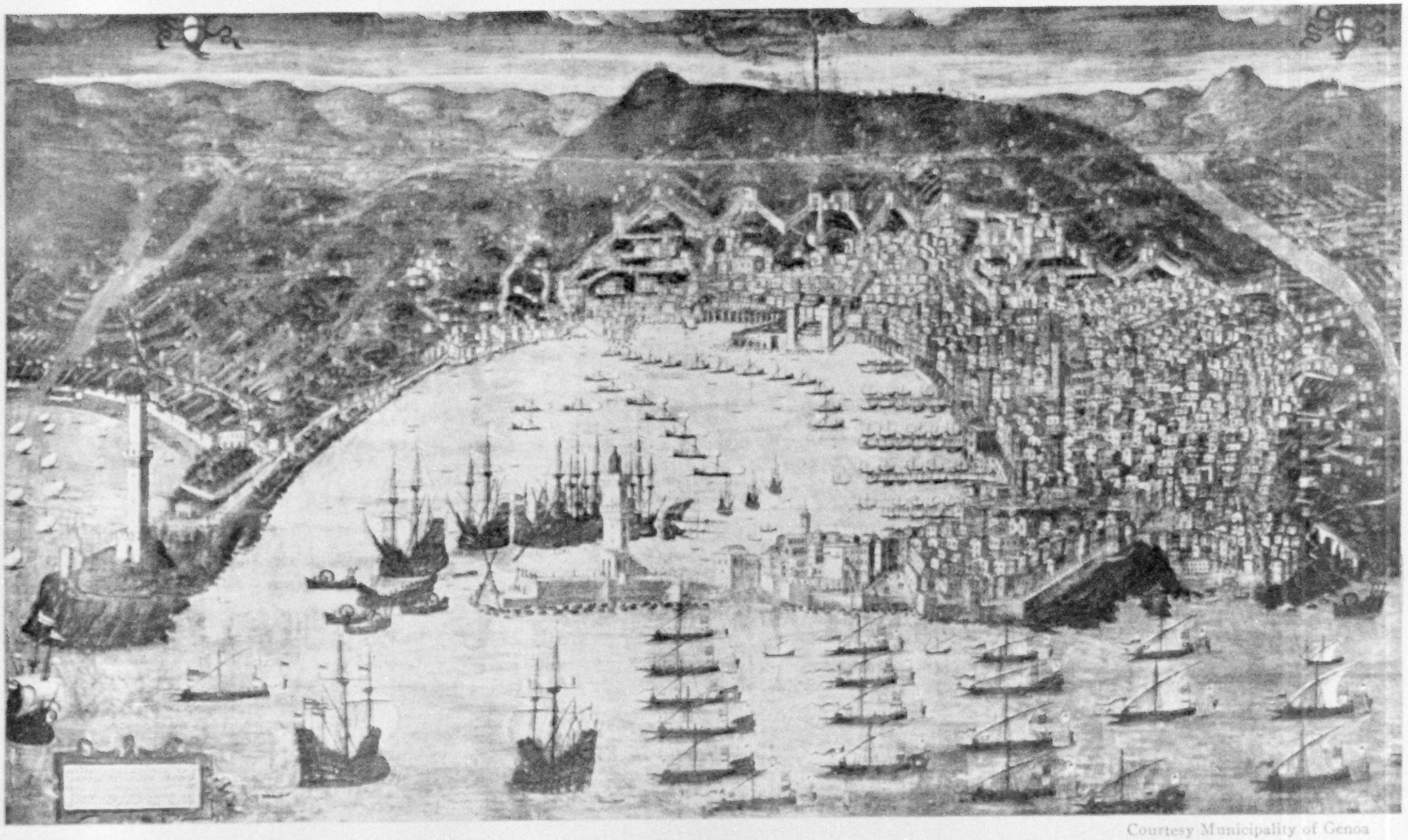
I had gone to the municipal offices to find what official records have to say of the family of Columbus. I found these offices, of course, in one of the beautiful old palaces of the Genoese nobles. Whatever activity you search for in Genoa, it seems, you find in a palace. The city offices are in one, the port officials transact their business in another, the Prefect looks after matters of state in a third; and in others are museums, art galleries, schools, and telegraph offices. You begin to wonder, as you make your way from palace to palace, whether the butchers and bakers and candlestick makers of Genoa conduct their businesses in these sumptuous structures, and to doubt that in Genoa's palmiest days there were any commoners at all to live in mere houses.

My mission unfolded, I was taken to the rooms in the Municipal Palace in which Genoa keeps mementos of her illustrious sons, whether by birth or forced adoption. There are portraits of the great

Photograph by Edizioni Brogi

WHENCE THOUSANDS OF AMERICA'S NEW CITIZENS HAVE COME

When the tide of European emigration to America was at its flood, tens of thousands of Italians left Genoa annually for New York. This view shows the western part of the harbor, with the lighthouse in the background (see page 347). In the right foreground is the central railway station and the Columbus Statue (see page 336). Genoa's harbor is one of the three busiest of the Mediterranean, the other close rivals for premier honors being Naples and Marseilles.



Courtesy Municipality of Genoa

THE INNER HARBOR OF GENOA THREE HUNDRED YEARS AGO

This old drawing, preserved by the municipality of Genoa, shows the city republic in 1597, when it was still one of the world's important maritime powers. The artist has shown clearly how the massive buildings of the city climb the steep hillside, tier above tier.

Photograph by Alinari

COLUMBUS LOOKS OUT THROUGH HIS DOORWAY TO FAME

From a tall pedestal of marble in the Piazza Aquaverde, the figure of the Discoverer gazes over the harbor whence he took to the life of the sea. Columbus leans upon an anchor, while at his feet sits a female figure representing America. The statue was erected in 1862, almost exactly 400 years after the future "Great Admiral of the Seas" began from Genoa his first voyage as a sailor.

statesman, Mazzini; the incomparable explorers, Marco Polo and Columbus; and sundry heroes of the Crusades. In a glass case rest the violin and bow of the world's master violinist, Paganini.

At an end of the council chamber, carved from one piece of marble, stands a tall pedestal surmounted by a bust of Columbus. A recess has been cut into the pedestal and fitted with an ornamental bronze door. This a custodian unlocked and took from their marble resting place Genoa's most precious documents: three letters written by the hand of Christopher Columbus and signed with his curious signature, and a parchment book containing copies of the documents through which various privileges and titles were conferred upon him by Ferdinand and Isabella.

COLUMBUS OFFERED REVENUES FROM THE NEW WORLD TO HIS BELOVED GENOA

All the letters were written from Seville to Genoa, two in 1502, as the Great Navigator was preparing for his fourth and last voyage, and one in 1504, after his return from the New World. Two are to Nicolo Oderigo, an important citizen of Genoa, who served as ambassador from the Republic to the Spanish court. That of March 21, 1502, tells of sending his book of privileges for safe-keeping. A letter written less than two weeks later, "To the very Noble Gentlemen of the very Magnificent Office of San Giorgio in Genoa" (the famous bank), offers one-tenth of his income in trust for the benefit of Genoese citizens. The letter of 1504, to Nicolo Oderigo, deplores the supposed failure of the officers of San Giorgio to answer the letter offering this gift to his native city.

The letters are framed now and protected by glass. This was not always so, as the missing lower corner of one of the documents shows. This fragment, the custodian told me, was torn off years ago by a tourist who had been courteously permitted to examine the letter—one of that inexplicable breed of vandals, the soulless souvenir-hunter, to whom ethics apparently are beside the point. He added the nationality of the individual, and I had a rather guilty feeling of relief that it was not one of my countrymen.

No glass protects the book in which the privileges and titles are set forth. It is bound in tooled leather and its thick parchment sheets are beautifully illuminated. The volume is in surprisingly good condition, showing little of the ravages of time. The wear and tear has fallen, instead, on the original old case of leather in which the book has been kept.

NARROW STREETS TEEM WITH TRAFFIC

The watchful curator of Genoa's Columbiana took his treasures as soon as I had examined them and locked them again in their queer place of safe-keeping. Then I was turned over to an obliging official, who was to take me to the house of Columbus. We walked through narrow, winding streets, teeming with an intimate mixture of wheeled traffic and pedestrians. Some of these ways had narrow sidewalks, from which the pedestrians, including ourselves, spilled over at intervals. Others had no curbs, and we must needs compete for space with taxis, open "cabs," and laden carts. Still other ways were mere crevasses between old five- and six-storied tenement houses, *vicos*, far too narrow for wheeled vehicles.

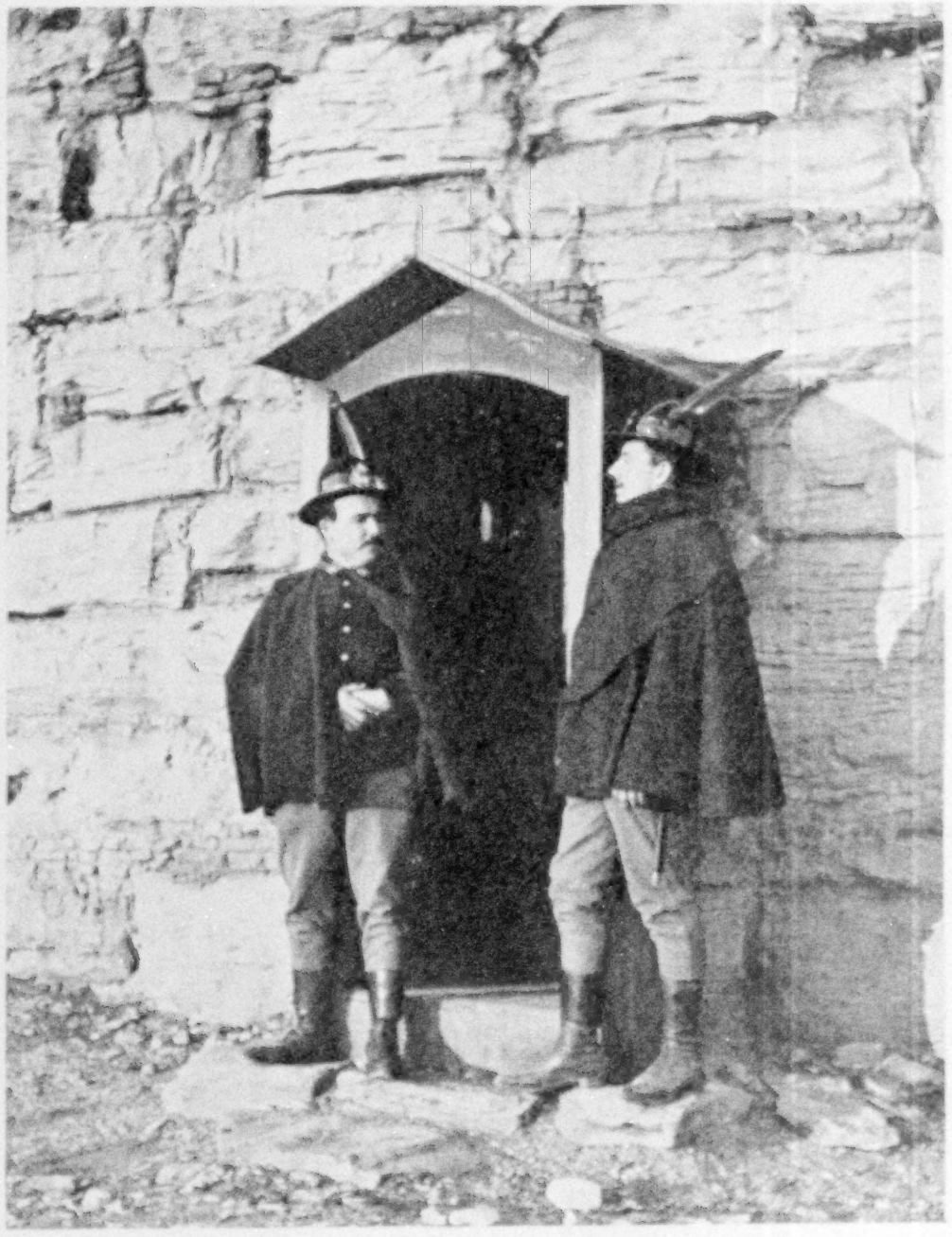
Suddenly we left these congested streets and came out into the Piazza De Ferrari, the largest of the open spaces within Genoa's business sections. One side of the square is lined with the buildings of Old Genoa, the walls of palaces for the most part; but on the opposite side a Newer Genoa stands forth—the Teatro Carlo Felice, the Academy of Belle Arts, the new Bourse, the Post Office. These fine structures are relatively new and form the portal to the Via Venti Settembre, which is itself lined with substantial business buildings of recent construction.

When this era of new construction was under way many ancient buildings were demolished. Part of the ground so obtained was used as sites for the new structures and part was left vacant and added to the piazza. One of the blocks of closely packed buildings marked for destruction contained the house of Columbus. The identity of this edifice had long been lost, but became known in 1885, after which the property was purchased by the municipality and set aside as a monument.

The house originally had five stories, but was only one room in width. It was hemmed in between taller buildings and

AN ORNAMENT OF THE LAW IN SUNDAY UNIFORM

The gentleman at the left, known officially as a *guardian*, is not quite as important as he looks, since he cannot make an arrest, but must hand offenders over to the regular gendarmerie of Genoa.



CUSTOMS OFFICIALS OF GENOA

The feather is a favorite finishing touch to the headpieces of Italian law officers and soldiers. The Carabinieri, the soldier-police of Italy, wear quills in their hats at a rakish angle.

Photographs by A. W. Cutler

Photograph by Florence Craig Albrecht

LIONS GUARD THE CATHEDRAL OF SAN LORENZO

This great church was the center of the intense religious life of the republic. In it are deeply venerated relics won from Venetian or from Saracen. Most highly prized are the ashes of John the Baptist, kept in a special shrine, and a fragment of the True Cross. In their jeweled caskets they were brought forth with pomp in the old days to calm the tempests that lashed the harbor and to quiet the equally destructive human tempests of the streets during popular uprisings.

Photograph by Emil P. Albrecht

THE WORLD'S FIRST WALL STREET (SEE PAGE 344)

A wing of the Palazzo di San Giorgio, which housed the famous Bank of St. George, the first corporation of stockholders to enter the business world of Europe after the fall of the Roman Empire. Half a millennium ago its keen-witted directors began the use of such now familiar financial devices as sinking funds, trust funds, bonded warehouses, checks, bank bills, and the practice of varying dividends according to annual earnings. Part of the palace is now the home of the Harbor Commission.

© Burton Holmes from Galloway

FLOWER MERCHANTS IN MODERN GENOA'S PRINCIPAL SQUARE

The Piazza De Ferrari is the heart of Genoa to-day. About it are grouped the Theater of Carlo Felice, the Academy of Fine Arts, the Exchange, and the Post Office. From it leads the Via Venti Settembre (20th of September Street), the city's most important modern business thoroughfare (see text, pages 333 and 337).

was in part supported by these neighboring edifices. When this group was torn down the entire house of Columbus could not be left unsupported, so the upper three stories were removed. The two lower stories, roofed over, now stand isolated, an approximate cube of rough masonry—a sort of Genoese Kaaba and, like that sacred Meccan shrine, a center of world interest, if not of pilgrimage (see page 345).

My conductor opened the old wooden door with a huge iron key and we stepped inside. Immediately a crowd of passers-by, attracted by the unusual opening of the place, gathered about the doorway and clamored to be admitted. Their actions spoke well for Genoese discipline. Not a foot crossed the unbarred threshold; and when the official in charge of our little party of three explained that they could not enter, but might look inside a few moments, they took his decision with good grace.

When he closed the door we found our-

© Burton Holmes from Galloway

GENOA, THE SUPERB, SWEEPS UP HER HILLS

The solidly constructed buildings—palaces, apartments, and hotels—that rise behind the Piazza Aquaverde, near the railway station (see, also, pages 334 and 336), give the newly arrived visitor an understanding of Genoa's title, "La Superba." Streets unseen from below wind among the buildings up the steep slopes.

selves in a gloomy, unlighted, boxlike room, wholly bare. It was some minutes before my eyes could make out the details of the interior. The floor is of stone, and I noticed that the brick walls had a queer, jagged surface. Overhead the beams and thick floor boards had the same rough, nicked appearance. My guide explained that for a long time before it had been identified the house had been used as a tenement by poor families of the city, and that when it came into possession of the municipality its walls and ceilings were encrusted with the grime of centuries. Scrubbing would do no good; so stonecutters were put to work with chisels and mallets to cut away the incrustations of half a millennium and to bring to light a surface at once clean and nearer to that of the Columbian era.

Toward the rear of the portion of the building still standing is a narrow, winding stair of wood. This we climbed to the second floor. The front room of this

MAKING MATTRESSES IN A GENOA STREET

The city's thrifty sons do not permit its street ends to go to waste. Itinerant workers find such open-air *cul-de-sacs* ideal workshops, rent free.

story, with two windows in the front wall, is more airy and better lighted than that below and was probably one of the chief apartments of the Columbus family. Its walls, too, have been chipped to form a fresh surface, and the floor, reasonably clean, has probably been scraped. Into one of the side walls has been set a marble slab, carved into a charming bas-relief of the *Santa Maria*, the ship which bore Columbus, the man, on his great adventure.* In a corner stands a little statue of Columbus, the boy. These are the only mementos of the great man who as a child lived here; for the rest the house is bare.

Before descending to the lower floor I explored a dark little room behind the stairway. History does not tell how it was used; nor does history tell, for that matter, at what age young Columbus quit the shelter of this rooftree. But imagination insists on stepping in and piecing out the disappointingly meager information about the early home of Columbus. This back room is just such a place as is assigned little boys in many a humble family the world around. May it not be that this was young Christopher's special domain; that here, after days of drinking in the strange sights of the water front the little fellow lay awake in the darkness dreaming of the days when he would sail over the horizon in a caravel of his own?

The front door of the house of Columbus opens upon a narrow way, the Vico Morcento or the Carrogio Diritto (the house number is 37), which leads a few feet to the west through the remains of the Gate of San Andrea, in the old city wall. It was while serving under appointment from the Doge as custodian of another near-by gate, the Porta dell' Olivella, now destroyed, that Domenico Colombo first took up his residence in this section of the city.

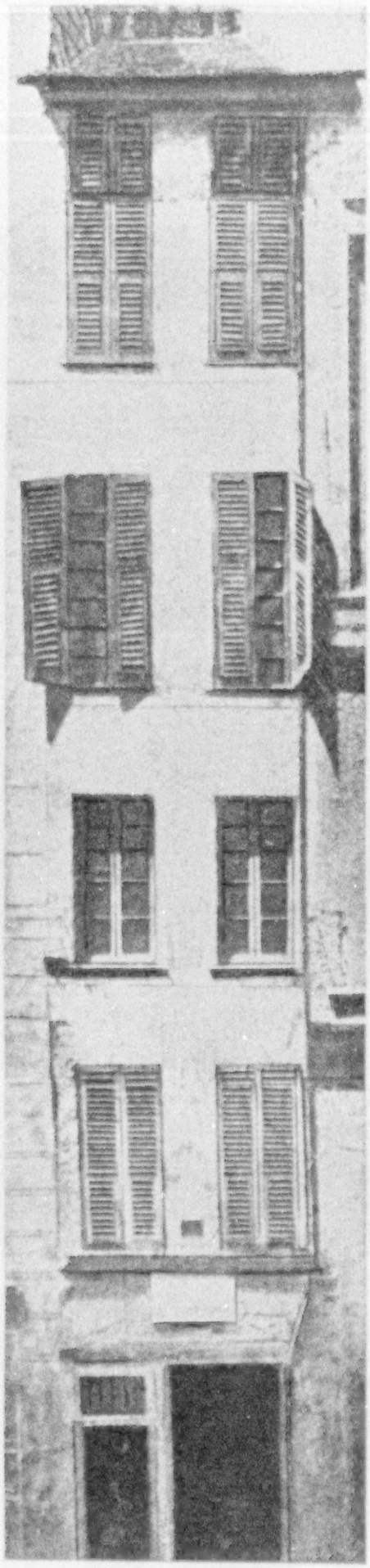
Across the street ancient tenement houses still stand. A climb to the third floor of one of them, that I might photograph the inscription on the House of Columbus, gave me a complete and all too vivid demonstration of why the wall surfaces of the latter were chipped away. These old structures, like those that stood

* See frontispiece "The Caravels of Columbus," by N. C. Wyeth, in the NATIONAL GEOGRAPHIC MAGAZINE for July, 1928.

© Burton Holmes from Galloway

HERE TROD THE RESTLESS YOUNG FEET OF THE BOY COLUMBUS

The rough-surfaced house on the left is No. 37 Vico di Morcento (also called Carrogio Diritto), the home of Domenico and Susanna Colombo, where Christopher spent his boyhood (see, also, illustrations, pages 344 and 345). This narrow little *vico*, walled in by tall tenements, is only a stone's throw from the largest of the modern squares of Genoa, the Piazza De Ferrari.



Photograph Courtesy Municipality of Genoa

THE HOUSE OF COLUMBUS AS IT WAS

The fame of this five-story structure was lost for centuries. The photograph shows the house before the adjacent structures, which helped to support it, were demolished (see page 345).

across the street, are to be torn down. One plan calls for such extensive demolition that the House of Columbus may be seen from the harbor.

GENOA BLAZED THE TRAIL FOR MODERN FINANCE

After the explorer in Genoa has seen the humble tenement of Columbus, his steps turn naturally to the Palazzio San Giorgio, the palace which housed one of the most remarkable institutions that the world has known, the Bank of St. George. Columbus had transactions with the Banco di San Giorgio—what Genoese man of affairs did not?—but they were incidental, and the establishment has no need to borrow luster from such contacts with the Great Navigator.

The first corporation of stockholders to enter the business world of Europe after the passing of the Roman Empire, San Giorgio may be looked upon as the patriarchal sire of our corporate age. Here again America owes a debt to Genoa. The land in which the corporation has been made to serve in almost every conceivable field of activity, and where banking has received a greater development and a more general use than anywhere else in the world, should look gratefully to San Giorgio, the trail-blazer of modern finance.

The institution which became the Bank of Venice is often considered the pioneer among European banking houses; but for a century or so it was only a government bureau for the registration of state bonds and the payment of interest, accepting no deposits. It was little different from the early "Compere," or associations of government loan-holders in Genoa, on which the "office," then the "house," and finally the "bank," of San Giorgio was built.

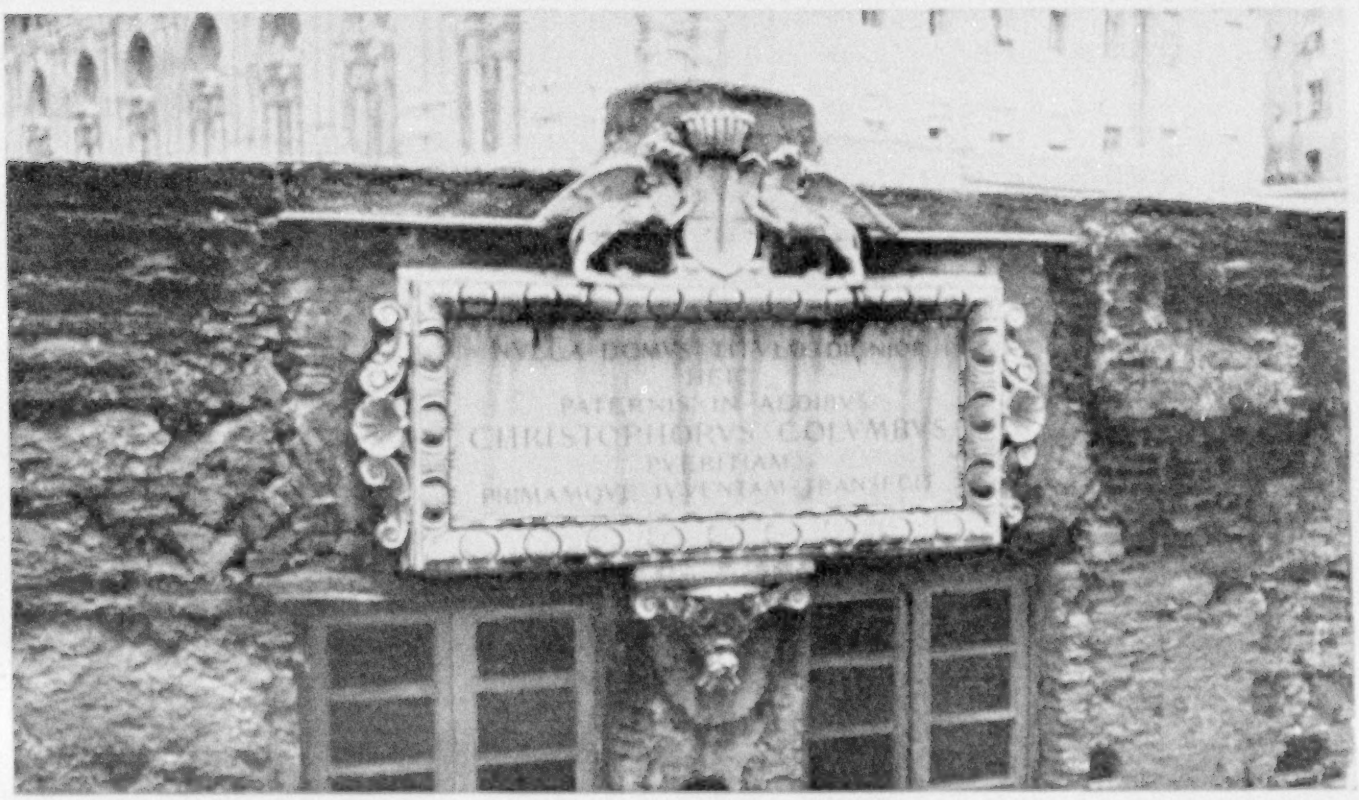
When the Venetian establishment began true banking operations is not definitely known; it is believed to have been somewhat later than 1407 when the Office of St. George was founded and immediately began the practice of banking functions. The development of the Genoese establishment along broad banking lines was rapid and long kept it in the premier position among existing financial institutions. Napoleon ended its existence after the formation of the Ligurian Republic in 1797.

When the visitor climbs the stone steps of the old palace near the port and enters

Photograph Courtesy Municipality of Genoa

THE HOUSE OF COLUMBUS TO-DAY (LEFT FOREGROUND)

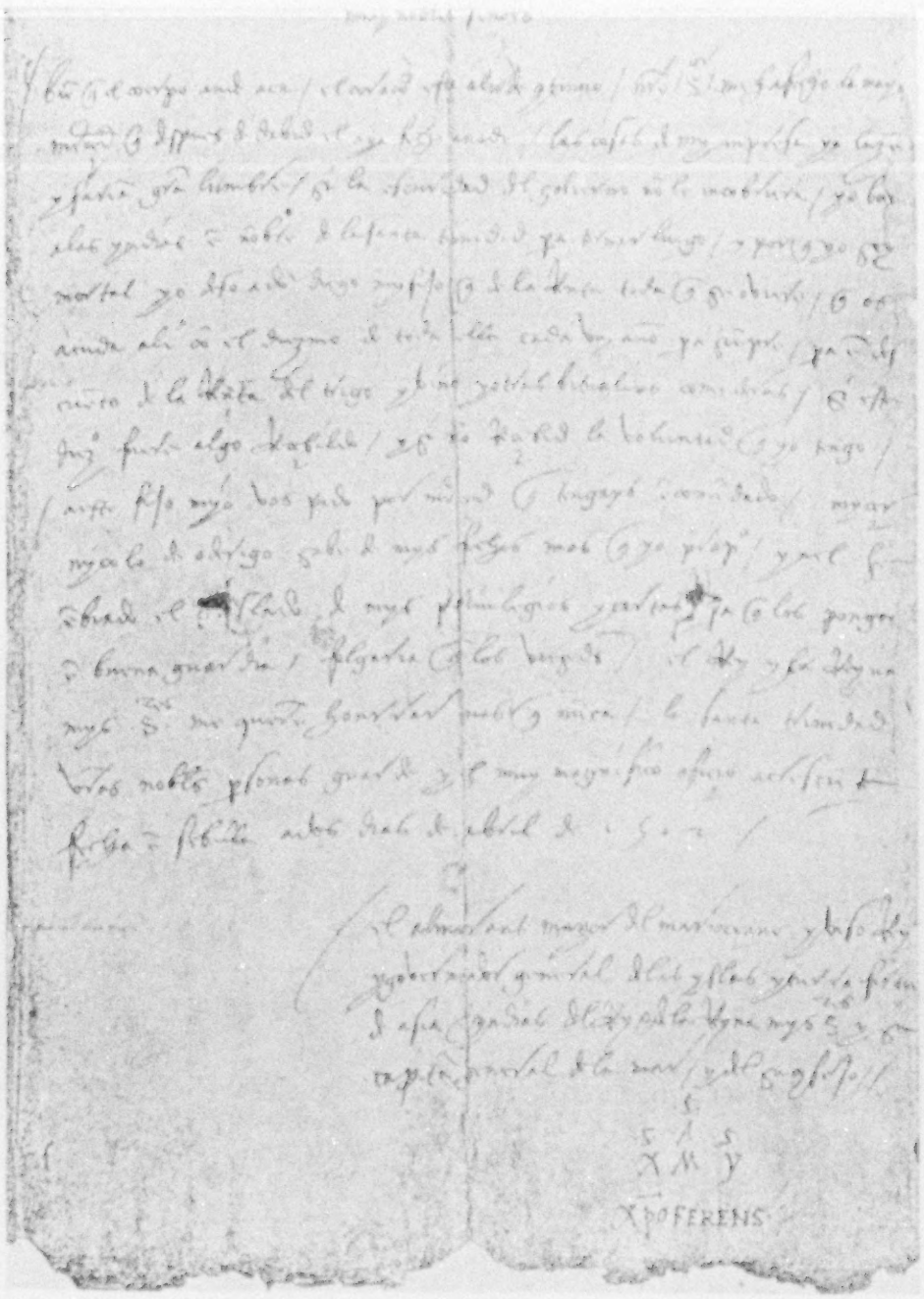
When the tenements that flanked the House of Columbus were torn down the slender building (see opposite page) could not safely be left standing. The three upper stories were removed. The two lower stories, roofed over, remain as an historic shrine (see text, page 337).



Photograph by McFall Kerbey

"NO HOUSE IS MORE WORTHY OF FAME"

The inscription, in Latin, reads: "No house is more worthy of fame, for here lived the parents of Christopher Columbus and here he passed his youthful days."



COLUMBUS OFFERS ONE-TENTH OF HIS INCOME FOREVER TO HIS BELOVED GENOA

This letter, in the handwriting of Columbus, is dated "Seville, April 2, 1502," and is directed "To the very noble Gentlemen of the very Magnificent Office of St. George in Genoa" (The Bank), (see text, page 349). It is signed by the queer cipher and the partial abbreviation of the Latin form of "Christopher," with which he signed all documents.

its lofty rooms, he is treading where banking history—and not a little important political history—was written.

Here is what would be called to-day the "Board Room." Around its huge table, a copy of which now stands in place, sat keen-witted and far-sighted directors more than 500 years ago. The methods and devices which they evolved became the very backbone of modern banking. An average group of well-informed business men would consider many of them the creations of recent decades.

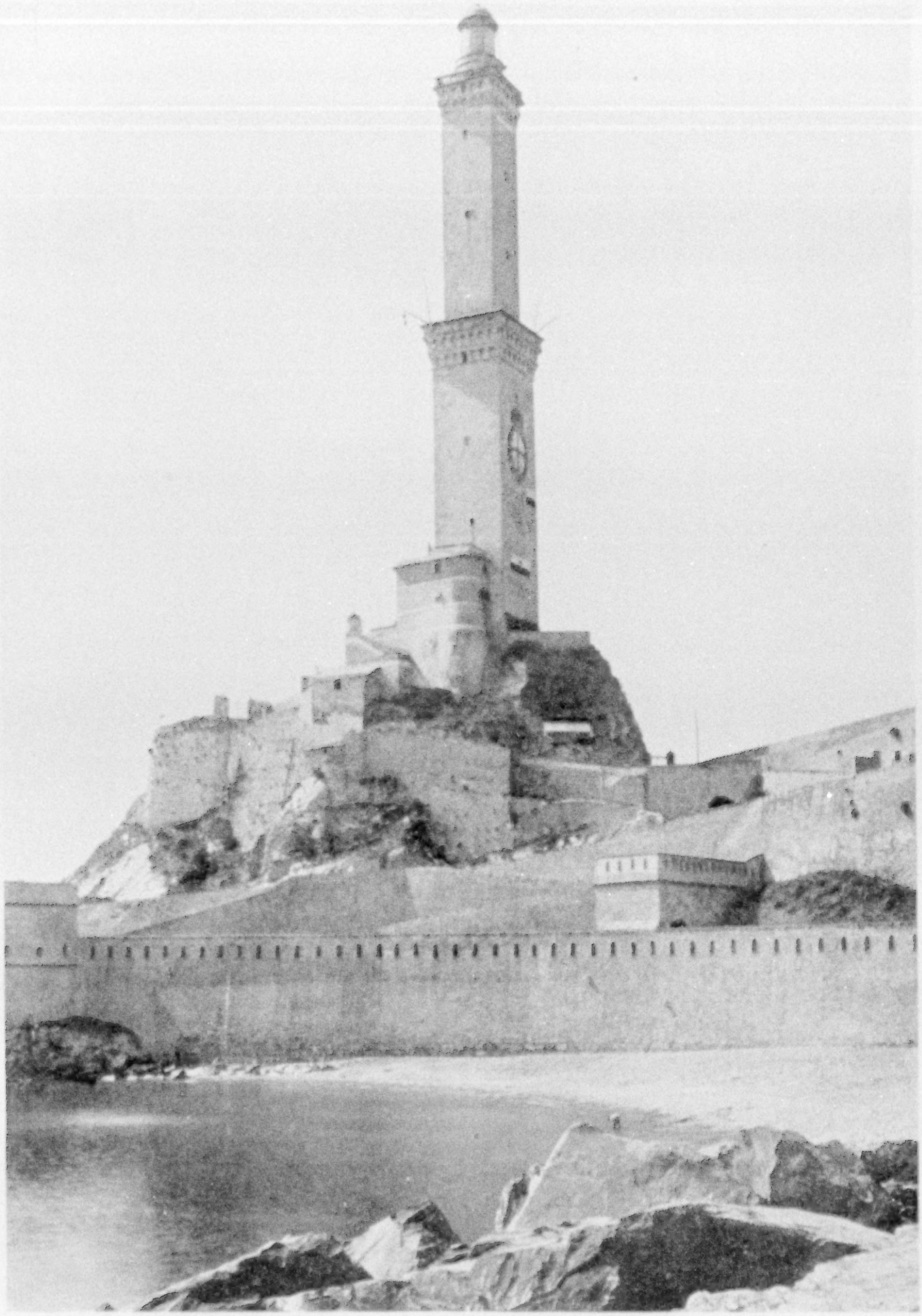
Here originated, in so far as modern Europe is concerned, such financial devices as the sinking fund, the trust fund, bonded warehouses, checks, bank bills (really bullion certificates, which circulated in place of money), and the practice of paying varied dividends, depending upon the profit of the particular year.

BANK WAS TRUSTEE FOR THE REPUBLIC

But San Giorgio was more than a bank. It was treasurer for the State; to Genoa only did it lend funds. For the State, too, it minted coins. And when certain colonies and possessions were no longer profitable to Genoa, the bank took them off her hands, administered them with efficiency, and returned many of them as once more valuable assets.

Never was there a breath of scandal against San Giorgio and its operation. It might well be called "Patriotism Incorporated." Its directors, entitled Protectors, made it a point of sacred honor to give of their time and ability to promote and guard the welfare of the institution, and through it the welfare of the State.

The swords of Genoese Guelph and Ghibelline were constantly at each other's breasts over political matters; ruling aristocrats were torn from their offices and doges set up; alien counts and podestas were called in to bring temporary peace to the turbulent city; civil war stalked through the narrow streets and blood flowed in the gutters; but through it all the Banco di San Giorgio went serenely



Photograph by Edizioni Brogi

GENOA'S BEACON GUIDING TRAFFIC OF THE SEVEN SEAS

This is one of the most striking lighthouses of Europe, rising 384 feet above the water. It was erected in 1643. A smaller shaft, built on a near-by promontory in 1139, lighted the way for ships in the days of Columbus.

Photograph by Hans Hildenbrand

CONGESTION GAVE GENOA THE MODEST BEGINNINGS OF A SKYSCRAPER ERA

With their city hemmed in on three sides by the Ligurian hills, and with only a narrow level shelf along the sea, the Genoese were compelled at an early date to build five- and six-story tenements. This curving, artificial cliff faces a portion of the harbor

on its way, a veritable financial rock of ages in Genoa's turbulent political waters. It rescued the city repeatedly from financial straits, commanded the ability of her most sagacious citizens, brought a steady income to its stockholders, and insured prosperity to the populace.

As one wanders through the rooms of the old banking palace he comes upon many reminders of the past, through each of which might be uncovered, if its clues were followed, interesting chapters in the life of old Genoa. One of the most picturesque glimpses thus afforded is that of Genoese philanthropy. From the walls of the Protectors' Room the figures of dozens of sturdy old aristocrats and merchant princes look down from bracket and niche. They are the Abou Ben Adhems of Genoa, those who loved their fellow men, who loved them substantially and practically, and created trust funds for their benefit. Had Fortune smiled as he hoped she would, Christopher Columbus would have been numbered among these Genoese worthies, perhaps the greatest of them all.

POSTURES OF STATUES SHOW SIZE OF BENEFACTION

Quaintly, the magnitude of the gifts of the men in San Giorgio's hall of fame is indicated by their statues. Those who gave 100,000 lire or more for the public welfare are represented by statues in a seated position. Those who contributed between 50,000 and 100,000 are shown standing. Busts commemorate the donors of 25,000 to 50,000, while all who established funds less than 25,000 are advertised to fame only by tablets or inscriptions.

Following the patriotic example of these public-spirited gentlemen, Christopher Columbus, then in Seville, Spain, wrote to the officials of the Office of San Giorgio on April 2, 1502, saying:

> Although my body is here, my heart is constantly over there (in Genoa). Our Lord has conferred on me the greatest favor ever granted to any one since David. The results of my undertaking already appear, and would shine greatly, were they not concealed by the blindness of the government. I am going again to the Indies in the name of the Holy Trinity, soon to return; but since I am mortal, I charge my son, Diego, that he pay you every year, forever, one-tenth of my entire revenue, such as it may be, for the purpose of reducing the tax upon corn, wine and other provisions. If this tenth amounts to something, collect it. If not, take at least the will for the deed. I beg of you to entertain regard for the son I have recommended to you. Mr. Nicolo de Odrigo knows more about my affairs than I do myself, and I have sent him the transcript of my privileges and letters for safe keeping. I should be glad if you could see them. My lords the King and Queen endeavor to honor me more than ever. May the Holy Trinity preserve your noble persons and increase the most magnificent House (of St. George).
>
> Done in Seville on the second day of April, 1502.
>
> The Chief Admiral of the Oceanic Seas, Viceroy and Governor General of the islands and continent of Asia and the Indies, of my lords the King and Queen, their Captain General of the sea, and of their Council.

SAN GIORGIO MADE PAPER MONEY POPULAR

Diego came into the possession of but little wealth, and he never, apparently, paid to the bank any of what he did receive. It was only the "will for the deed," therefore, that Genoa ever received from the bequest of the Great Navigator—that and the evidence of the love that lingered for his boyhood home.

In a corner of the great hall of San Giorgio stands the old vault of the bank, a cubelike thing of rusty iron and concrete, no larger than a medium-sized clothes closet. The smallest country bank in the United States has a safer strong box for its moneys; yet this receptacle played well its part in keeping safely one of the greatest hordes of bullion of its day—a day, however, when bandits were not so bold and when they had not yet borrowed from science hypodermic syringes, machine guns, and acetylene torches.

In a glass case in another part of the great hall is the mechanism from which were printed the bank bills of San Giorgio, in sheets of half a dozen or more, as our paper money is printed to-day. What monuments those bits of inked paper were to confidence well earned and jealously guarded! In the commercial world of their day they were more highly valued than the bullion they stood for.

CLIMB HILLS AND RISE THROUGH CENTURIES

Genoa's many old palaces, her labyrinth of streets and *vicos*, her unexpected *pi-*

A STREET LAUNDRY OF GENOA

azzi, beckon almost irresistibly. One could spend weeks in them, following threads of fact and legend back to the palmy, picturesque days of the luxurious, proud, quarrelsome old Republic. But there is only time for a hurried survey. If we start at the harbor and climb toward the city's heights, we shall rise through the centuries.

The shore itself was the scene of Genoa's earliest life. There, no doubt, was the first straggling settlement, in the days when Phœnician galleys were thrusting their prows into every bay of the Mediterranean. Later Greek traders came to bargain with the populace. There, in 205 B. C., a Carthaginian force, led by a brother of Hannibal, laid waste the town because it sided with Rome. Then came the Pax Romanum and Genoa became the leading city of Liguria. Only the rocks of the headlands and relics dug from the soil remain to testify to those earliest Genoese chapters.

One of the oldest remaining structures of Genoa is the Tower of Embriaci, all that remains of the castle built near the harbor by a citizen who distinguished himself at the capture of Jerusalem during the First Crusade, in 1099. Farther upward is the Cathedral of San Lorenzo, which was founded in 985; but its oldest masonry probably dates from 1100, when it was rebuilt, while most of the present edifice is of later construction. The gate of San Andrea dates from the middle of the 12th century.

With the Ducal Palace, residence of the Doges, one enters the 13th century, though the building was remodeled near the close of the 16th. Beside the palace stands the Gothic *Torre del Popolo*, representative of the 14th century. Northward a maze of narrow streets leads to the Piazza Competto, the fashionable center for palace construction in the 15th century.

We climb through other narrow ways to another shelf, on which lie the Via Garibaldi and the Via Cairoli (called "Nuova" and "Nuovissima" when they were laid out), and enter Genoa of the 16th and 17th centuries. The days of Genoa's might as a naval power had passed then, but her prosperity was at its highest pinnacle.

Palace after palace rises along the two thoroughfares as well as along the Via Balbi, also laid out about this time. It is along these streets that the visitor gets the inescapable impression of the solidity of

READY FOR THE JOURNEY TO THE NEW WORLD WHICH THEIR FELLOW CITIZEN GAVE TO MAN

Genoa's buildings—an impression borne out, whether he explores uphill or down.

Since the day, more than four and a half centuries ago, when the naïvely named "New Street" and "Newest Street" came into being, Genoa has climbed steadily up her hills, each generation contributing edifices on a higher level. Builders of the 18th century left their solid private residences, and those of the 19th and 20th their even solider apartment houses—almost palaces themselves, in all but name and interior arrangement.

GENOA STILL BUILDS STANCHLY AS OF OLD

Up to newest Genoa of to-day tram lines run with many a snaky fold, as they loop inward across ravines and outward around hilly buttresses, passing balustraded terraces and staggered flights of steps. Beside the folds of steel runs one of the city's scenic roads, "The Way of the Circumvallation on the Mountain," and over it the visitor's taxi pants as it lifts him above the city.

The buildings become fewer. There, its thick walls encased by the tied scaffolding of Italy, is a half-completed structure. Genoa is carrying on, one notes, carrying on in the stanchness of her construction as well as in the conquest of her hills.

Soon the entire city lies revealed. It is then that one realizes the full force of Genoa's title—The Superb. Behind as a background rise the green Ligurian hills, the nearer crests capped with the fortresses placed there by the Republic. In front a great amphitheater slopes down to the sea. Roads and streets are its aisles; the great blocks of its palaces and other buildings form the gigantic seats; domes and towers are the ornaments of its boxes of state. And below the lowest slope, its unruffled waters catching the light, lies the harbor, a perfect stage for this city of the sea.

SOME OF HISTORY'S GREATEST FIGURES APPEARED ON GENOA'S STAGE

What pageants and spectacles and stirring incidents that stage has held!

The Carthaginians are coming! They pass, and the city lies in ruins.

The Saracens are victorious, and in chains the flower of Genoa leaves the loved shore for lives of slavery.

Clouds of incense rise; gorgeously robed prelates give their blessings; a Gen-

Photograph by McFall Kerbey

THE NEW ORDER AND THE OLD

All over Italy the face of Benito Mussolini stares forth from walls, posts, fences, and even monuments. In Genoa the most conspicuous place in which the stenciled features of Italy's premier have appeared is the pedestal of the statue to Garibaldi, the great liberal leader of the nineteenth century.

oese fleet sails off to the Crusades. It returns laden with sacred relics and rich treasure from the East.

A ship of ill omen puts in. It has brought the Great Plague to Europe; through it millions will die. Galleys bring the stones of a demolished monastery from Constantinople, a monastery built by Genoa's hated rivals, the Venetians. And from those alien stones rises the Republic's bulwark, the Palace of San Giorgio.

Richard the Lion-Hearted steps ashore and is acclaimed. After him, through the centuries, comes a long line of world figures—admirals, kings, emperors, popes, fêted guests of the Republic.

Sorrowfully the remnant of a defeated fleet puts in. The battle has gone to Pisa or to Venice. But yonder are galleys of victory! The city goes wild at the news of Genoa's defeat of Venice in 1298. In the harbor the vanquished Venetian admiral, chained to a mast, beats out his brains. A strange figure, Marco Polo, is led ashore to be cast into prison, there to write his marvelous narrative.

Triumphant galleys sail in, bearing Gargantuan iron links. It is the fleet that has finally humbled Pisa and bears as a trophy of its victory the great chain which the rival city had placed across its harbor.

We see in fancy another day.

Sunshine bathes a peaceful, busy harbor. It is a great day for Genoa, but she knows it not.

A caravel is sailing, and on it a lad of fourteen years, his heart beating with excitement, is beginning his first voyage as a sailor.

Why should Genoa take notice? Has she not sent tens of thousands of her young men to the life—and death—of the sea? It is nothing, save perhaps to the wool-weaver Domenico and his wife Susanna.

Is it not to be expected? One more boy of Genoa, who has played about her quays, who has stood on her hills and gazed wistfully over the watery horizon—just one more has taken the inevitable step.

Young Cristoforo Colombo is putting out to sea.

A VOYAGE TO THE ISLAND HOME OF ROBINSON CRUSOE

By Waldo L. Schmitt, Ph. D.

Curator of Marine Invertebrates, National Museum, Smithsonian Institution

BELOW me was the beach where Crusoe found Friday's tracks in the sand. At the water's edge a Chilean fisherman tinkered with the engine of his motorboat. From where I sat, in front of the cave, I could gaze far over the sea—that same empty sea that Robinson Crusoe watched through the years, waiting a friendly sail.

About the cave itself, where Crusoe talked with his cats, his pet kids, and his parrot, and where he kept his guns, tools, and sea chests saved from the wreck, the ground was strewn with pie crust, paper napkins, and picnic litter; for yesterday a party of Valparaiso tourists had swarmed ashore to see the island in a day.

IDLERS DRESS AS CRUSOE AND FRIDAY TO AMUSE TOURISTS

When this tourist boat steams in two island idlers garb themselves as Crusoe and Friday. One wears a peaked goat-hair cap and carries a parrot and a clumsy umbrella. The other, as scantily clad as Friday was, poles their rude raft around the ship, as they seek to amuse the restless trippers and gather a few tips (page 356).

Such is the power of good printed words. In every tongue from Japanese to Scandinavian, millions read Crusoe and Friday. Even after 200 years, Defoe's great book is still perhaps as widely known as any other, excepting always the Bible.

Weeks before, I had left the coast of Chile to visit Robinson Crusoe's hermit home, that romantic bit of rock and earth that lifts its green head from the Pacific, 365 miles west of Valparaiso. But no ocean greyhound, no crack tourist liner, carried me. I came to Juan Fernández Island much as Crusoe came, in a 60-ton windjammer.

As our stubby, dripping nose smashed the howling seas, I wondered why this mad ocean was ever called *pacific*. The only other passenger was a Chilean lady. Between fellow travelers, however, no merry quip and jest now, no cards or music on moonlit decks. Society and seasickness do not mix, especially in a 10 x 12 "saloon," with bunks built parallel with the dining table. Although I read Spanish, I speak it as a Russian might recite "Hiawatha." So between us, now and then, we exchanged remarks scribbled on bits of paper sack. The lady's husband, once governor of Easter Island, had been lost at sea. She, also, was bound for Crusoe's Island, to visit relatives engaged in the lobster fishery.

Only twice was our tedious trip broken by excitement, and the skipper's foghorn voice raised to battle pitch. That was when he found extraneous matter in his tea, and again when we hit a whale.

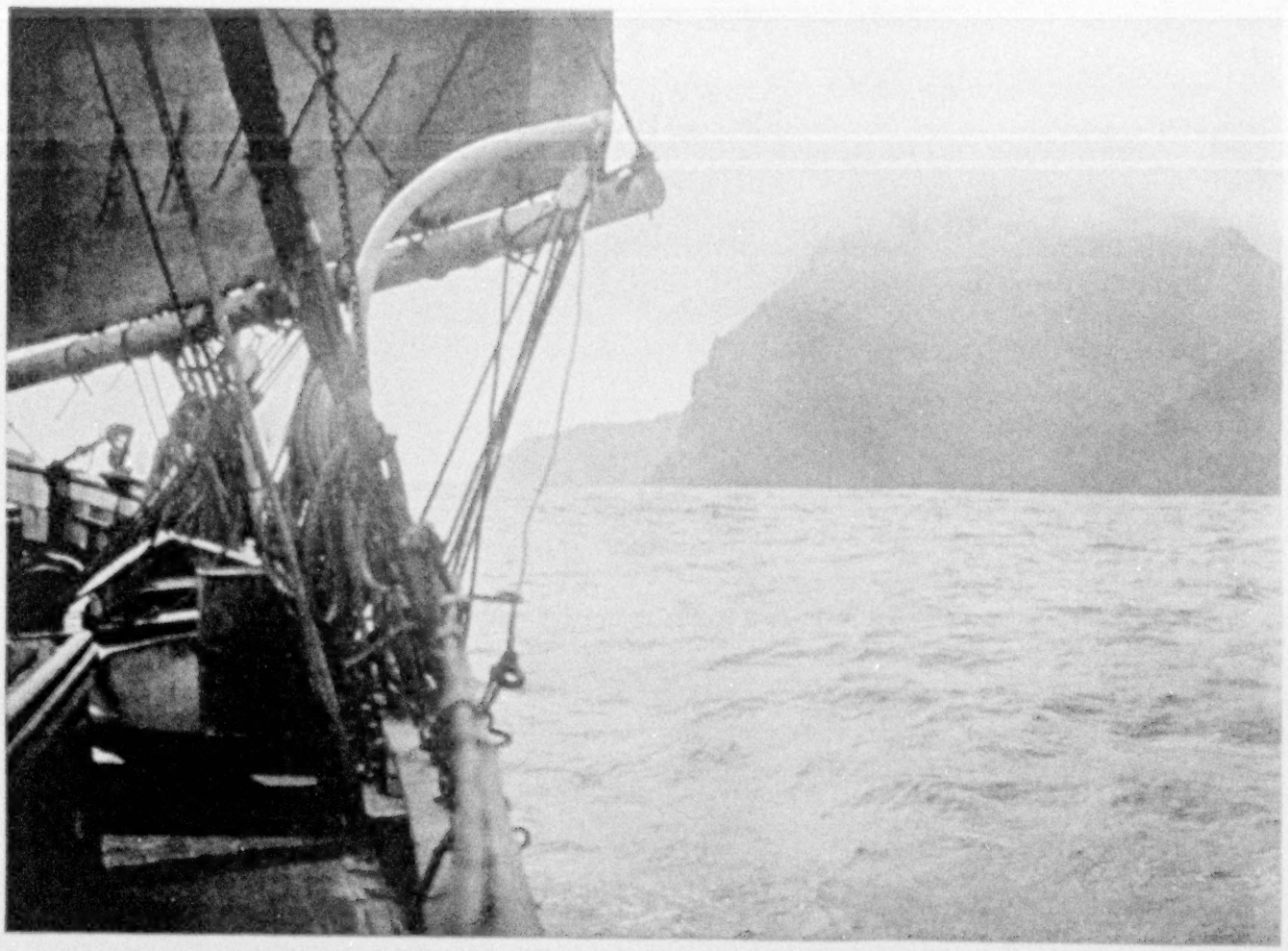
It's an odd fact that no marine creature likes to have a boat pass him. This whale not only swam ahead of us, but tried to right-angle across our bow. Down on him we crashed just as we slipped over a big sea, hitting him a frightful blow that rocked him from snout to tail. He snorted like a freight engine grunting in an effort to start a long train; then up he came in our wake, spouted a geyser blast of water and spray, and sank to rest his back.

By profession I am a student of Nature and specialize in marine life. Pondering such piscatorial problems as whether shrimp make good mothers, how flying fish make a landing without crashing, and what the well-bred crab should eat for lunch might be thought the limit of imagination for a man whose life is spent prying into the diet, distribution, and habits of marine invertebrates.

Nevertheless, not even a shrimp hunter can sail these southern seas, where romance and adventure never die, without finding far more to think about, for example, than why some fish mothers carry their eggs in their gill cavities and others don't.

DAYDREAMING OF BUCCANEER AND SEA ROVER

On less stormy days I lay on a coil of rope up forward and watched the cloud world skim over. Prying all thoughts of



Photograph by Dr. Waldo L. Schmitt

CLOSING IN TOWARD THE ISLAND

Hidden by the rigging forward are two members of the crew of one of the two regular schooners which alternately make one trip a month from Valparaiso to Juan Fernández. A third makes occasional trips.

Photograph by Hans Frey

LOOKING WESTWARD FROM SELKIRK'S LOOKOUT

Santa Clara, or Goat Island, in the offing, is between four and five miles in circumference.

Photograph from Odber W. Heffer

THE HARBOR OF JUAN FERNÁNDEZ: CUMBERLAND BAY

shrimp and crabs from mind, I day-dreamed of Balboa, Magellan, Cook, who passed this way to die. And of the *Golden Hind* and dare-devil Drake. Through these very waters went the English rovers, sacking Spanish towns along the restless coast. Food, goods, gold they stole from the Dons, and then away.

And Manila ships! How many an early London fortune was founded on silk and pieces of eight robbed from Acapulco-bound galleons! For pirates, after all, were the fathers of ocean trade. They learned sea paths, the best sailing routes, located the richest islands and the tribes with things Europe could use.

Into this same then unknown sea of 70,000,000 square miles pushed also the bold Dutch and Spanish sea gypsies, twisting their unwieldy wooden craft through tropic hurricanes. Often half their crews were down or dead of hunger and scurvy. Yet they discovered new lands and fought their way ashore against spears and arrows. To far New Zealand they ventured, to the Solomons, through all Polynesia. Often a big island, or even a whole archipelago, would be found, only to be lost again for years, and rediscovered by another adventurer.

Then the whalers—seven hundred and thirty-five Yankee ships in one year cutting blue water from Crusoe's Isle up to the Aleutians. Pirates, whalers, sailors, scientists, tourists—that is the sequence in Pacific conquest. Darwin on the *Beagle;* Moseley on the *Challenger;* Americans on the *Albatross;* and the deep-sea workers dragging the ocean's bottom, hunting the best place to lay cables.

Later, ukuleles, hula skirts, Kanaka songs, and South Sea scenes for motion-picture melodramas, all a part of the romantic Pacific picture.

But I am a scientist, not a romanticist. My business is fish. The Smithsonian didn't send me 8,000 miles just to lie on deck and dream. So, as the sea quieted a bit, I got out my dragnet and threw it over our stern to search out the life below.

Diminutive denizens of the deep I drew in and pickled in bottles, numbered and labeled, after the manner of my kind; then dropped my drag for more of ocean's tiny life.

LUMINOUS SEA LIFE AT ITS BEST

Marine fireworks one might call the phosphorescence of the sea. In all my specimen hunts, from Alaska to the Ant-

Photograph by Dr. John D. Long

A PAGE FROM DEFOE

"Robinson Crusoe," Friday, the goat, and the parrot coming to visit the *Orcoña* and its passengers (see below). Friday is red-headed and freckled.

Photograph by Camden L. McLain

THE ROBINSON CRUSOE COMEDY TEAM GREETS VISITORS TO JUAN FERNÁNDEZ

While the tourists crowd the island side of the excursion steamer, a raft with two members of the crew, as Crusoe and Friday, and all the "fixin's"—parrot, dog, cat, etc.—is dropped over the other side; they sail and scull around close up to the ship and later clamber aboard to be introduced.

arctic, I never saw anything more startling than the nightly display of luminous sea life on the cruise across from Chile. At night pelagic sea life is at its best. With every lap of wave or wash of boat a million tiny points of light are revealed, with here and there the rocketlike trail of a fish dashing through myriad organisms that glow and scintillate when disturbed.

When I pulled in my dragnet I would pour its contents into a pan of salt water. In sunlight or under an oil lamp the captives resembled only so many animated specks of dirt. But in the dark they took form, darting and flashing about like tiny electric lights. Copepods, mysids, or opossum shrimps, all food of fish and sea birds, came up in my net.

Photograph by Dr. Waldo L. Schmitt

THE BRONZE TABLET ERECTED IN MEMORY OF ALEXANDER SELKIRK

B. Vicuña Mackenna, in his comprehensive history of this island, which he never had the good fortune or pleasure of visiting, remarks in an almost poetic strain regarding this memorial: "From the time the English mariners on board the *Topaze* placed upon the rugged cliff their tablet, 'In Memoriam,' in honor of their compatriot, Alexander Selkirk, in the early days of the year 1869, the Island of Juan Fernández lost completely all its claims and attractions as the theater of adventure and of romance, of salvation and of tragedy. It may well be said that this sheet of metal became the funeral covering of a now chilled tomb, the appropriate epitaph of three centuries."

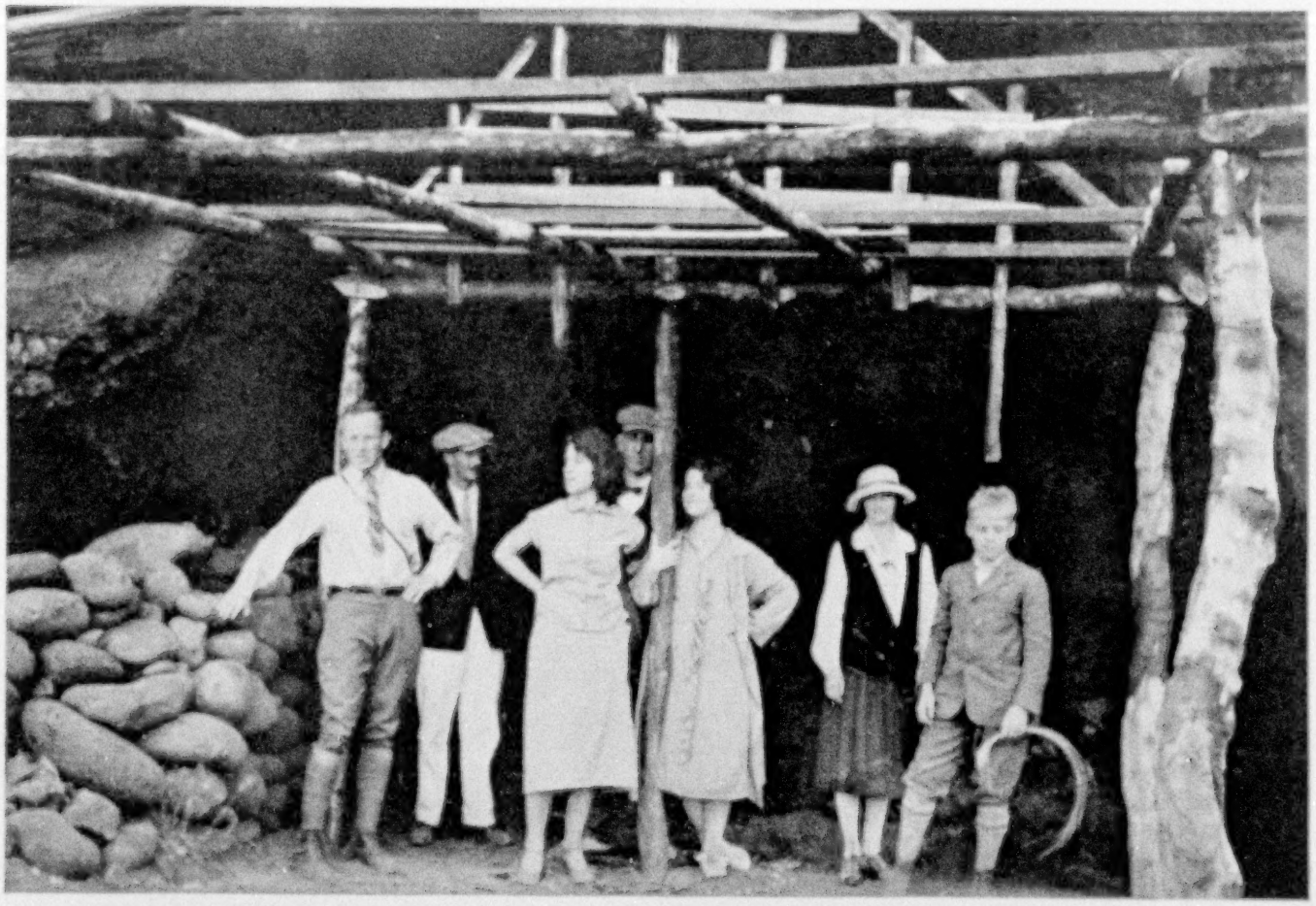
THE LANDFALL

Eight days out of Valparaiso we raised the historic island, darkly blue through morning mists. It cleared as we came nearer. And Crusoe himself, cast up by the sea, couldn't have been happier than I to feel my feet on dry land again.

Strangely beautiful is this island. Climbing 3,000 feet up from the sea, its woody ridges lay wreathed in fantastic lacy patterns of silvery fog. As we rowed ashore, the landscape rolled down toward us like some giant theater's drop curtain, its green ferns, forests, and streams painted by Nature's own hand.

Now where Crusoe hunted huddles a hamlet of Chilean fisher folk, with the boats and sheds of a lobster-catching industry. Delicate, delicious lobsters they are, but the men who catch them will clamber over a whole boatload to quarrel about a can of American salmon!

Más-á-Tierra (Landward) is the correct name of this island on which Alexander



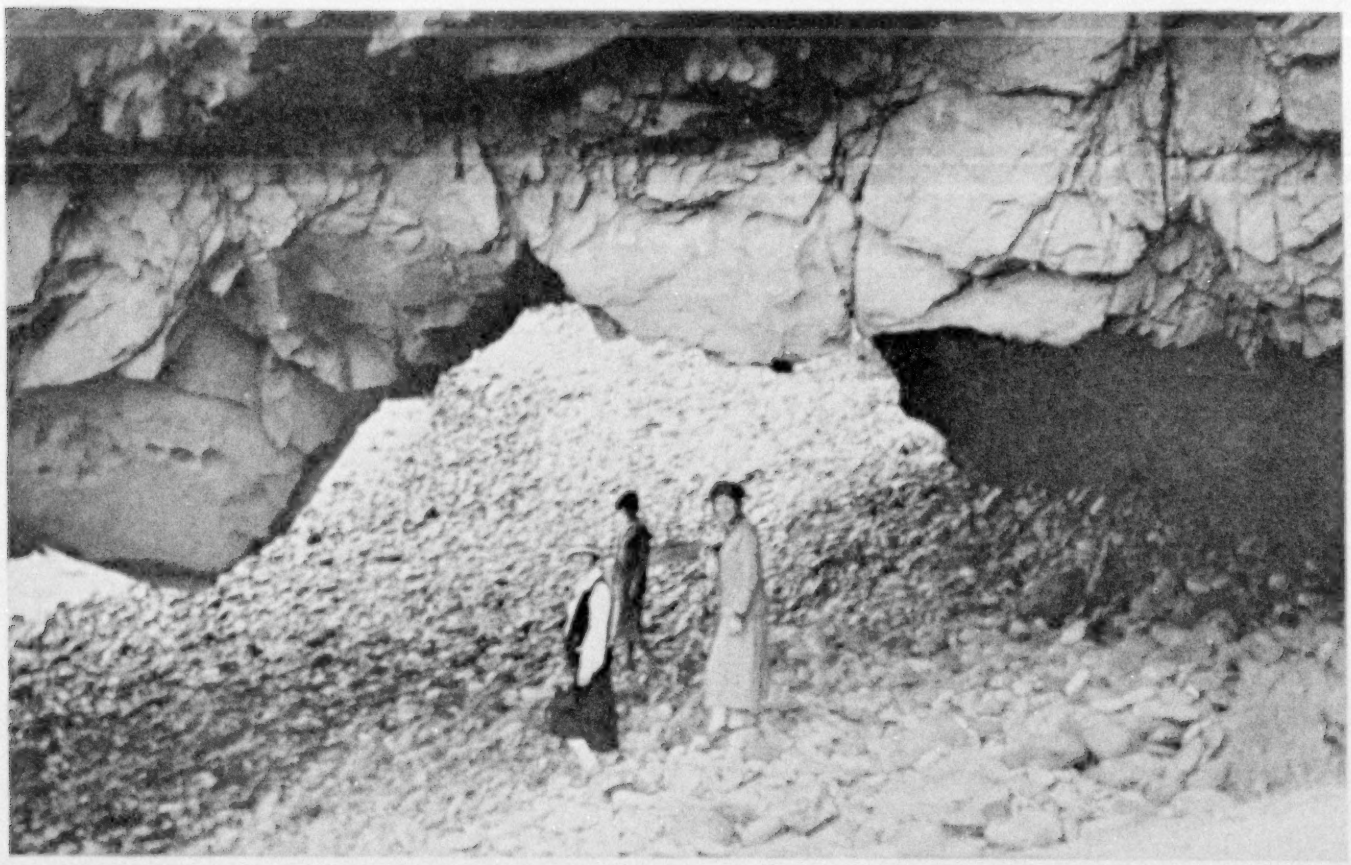
Photograph by Dr. John D. Long

THE MODERN ENTRANCE TO THE TRADITIONAL CAVE OF ROBINSON CRUSOE

Photograph by René Durand

THE ROAD OVER THE MOUNTAINS TO THE WIRELESS

Believe it or not, this is the road. As the town of San Juan Bautista is rather concentrated, the pathways to distant parts of the island are often nothing more than cattle trails.



Photograph by Dr. John D. Long

A NATURAL BRIDGE UNDER WHICH ONE GOES TO REACH CRUSOE'S CAVE

Photograph by René Durand

A FISHERMAN'S MODEST HOME IN ONE OF JUAN FERNÁNDEZ'S FERTILE VALLEYS

The thin, white, vertical pole carries one end of a wireless antenna. Programs broadcast daily in Valparaiso are received here.

Photograph by Dr. Waldo L. Schmitt

A FINE DAY'S CATCH (SEE, ALSO, PAGES 362, 363)

Selkirk, reputed hero of Defoe's romance, was put ashore.

Near by is Santa Clara, or Goat Island, and about 100 miles westward lies Más-á-Fuera, or Further Out Island. These three form the Juan Fernández group, named after the Spaniard who discovered them in 1563. Now they belong to Chile—in law; but in imagination every schoolboy on earth claims a proprietary interest here.

High up the side of Más-á-Tierra stands a tablet (see illustration, page 357) which reads:

In Memory
of
ALEXANDER SELKIRK,
Mariner,
A native of Largo, in the county of Fife, Scotland, who lived on this island in complete solitude for four years and four months. He was landed from the *Cinque Ports* galley, 96 tons, 16 guns, A. D. 1704, and was taken off in the *Duke*, privateer, 12th Feb., 1709. He died Lieutenant of H. M. S. *Weymouth* A. D. 1723, aged 47 years. This tablet is erected near Selkirk's lookout, by Commodore Powell and the officers of H. M. S. *Topaze*, A. D. 1868.

CRUSOE'S ISLE NOW A LOBSTER FISHERY

To-day on this island one hears much talk about lobsters, but little of Robinson Crusoe. The easy-going, Spanish-speaking inhabitants, shut off from the world and the scores of books that describe their island, do not suspect how famous it is. Nearly all its 287 people make a living in the lobster trade.

Here is one of the most extraordinary shellfish industries in the world. In one year 80,000 or more lobsters are caught, not counting the small ones thrown back. Time was when these creatures swarmed the shores in such armies that the islanders had only to strew bits of meat along the beach, then walk about with a stick and tip the lobsters over on their backs.

Due to wise conservation methods of the Chilean Government, island waters still abound with lobsters; but now they are caught with hoop nets set offshore and baited with stale fish. Often I went out, long before dawn, with the men who tend the traps. Over a charcoal stove astern we made coffee and broiled fish for breakfast—but nobody ever ate a lobster.

To keep the catch alive, buckets of sea water are dashed over the crawling crea-

OFF FOR THE FISHING GROUNDS AT 5 A. M.

The outboard motor boats are about 25 feet long and usually carry two men. Each boat, besides gear and food, has sails and water butt. The usual trip takes twenty-four to thirty hours, but on at least one occasion a boat has had to run before a storm and could only make the mainland, nearly 400 miles away.

Photographs by Dr. Waldo L. Schmitt

LAID UP FOR SUNDAY REST

The entire fleet of fishermen's boats at Juan Fernández, with three of the rowboats used to bring supplies ashore and take lobsters out to the schooners.

Photograph Courtesy Santiago López

IN THE LOBSTER FACTORY ON JUAN FERNÁNDEZ

Before the shell is removed the lobsters are boiled in huge iron baskets. The man wearing the Panama hat is the administrator of the larger of the two lobster concessions on the island.

tures and a tarpaulin is used to shade them from the sun.

No lobster remains long in good health and spirits out of salt water. So, usually within 24 hours after catching them, the Crusoe Island fishermen try to get their lobsters to port and into the "live cars." These are scows made of slats, floating half-submerged in Cumberland Bay, in which the lobsters are held captive.

CRUSOE LOBSTER PRIZED BY CHILEAN GOURMETS

Twice a month a boat sails from the island. It carries the scant mail, any passengers, and a load of lobsters, which are often two and a half feet long and weigh as much as from 10 to 12 pounds. On the island the price paid the fishermen is but nominal; yet in the market at Valparaiso a live Crusoe Island lobster may bring the equivalent of from three to five dollars. On a café table in Buenos Aires the same lobster, after his trans-Andean trip, sells for more.

The island schooner is fitted with special built-in tanks, so that sea water is let in and circulates freely to keep the lobsters alive. On reaching port the tanks are pumped out; then a man climbs down and lifts out the lobsters, one at a time, holding them by their feelers.

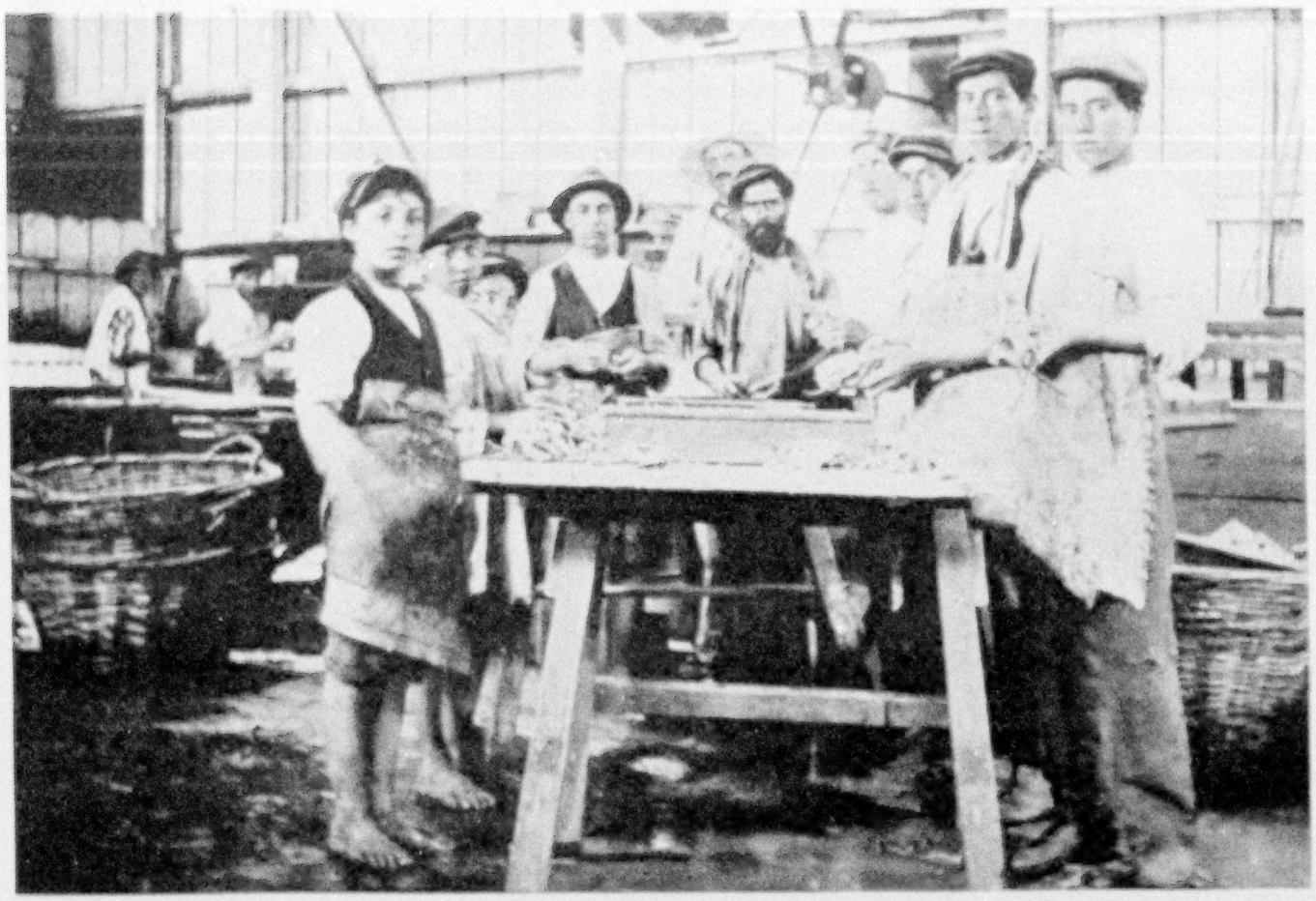
Occasionally a few lobsters are canned at a small plant on the island, but usually they are shipped alive to "Valpo," as the people of the south call Valparaiso.

The lobster of Juan Fernández (*Palinustus frontalis* (Milne Edwards)) is minus the large claws which distinguish the lobster of our North Atlantic waters (*Homarus americanus*). It is a close relative of the American crawfish known as the spiny lobster in Florida.

A SPORTSMAN'S PARADISE

Could you put a rope around this island and tow it up for anchorage off Los Angeles, what a sportsman's paradise it would make—the best-known rod and gun club on earth, thanks to Defoe!

Besides the wild-goat shooting, fishing around its rocky shores affords all the amazing luck that anglers' tales are spun from. Here are the big morays, or wolf



Photograph Courtesy Santiago López

IN THE CANNERY THE LOBSTER SHELLS ARE REMOVED BY JUVENILE LABOR

Photograph by Dr. Waldo L. Schmitt

LOADING LOBSTERS FOR SHIPMENT TO THE MAINLAND

From 2,500 to 3,500 of these large crawfish are carried on a single trip to Valparaiso. They are counted and carefully measured with a fixed metal device. All shorter than 10 inches must be returned to the water. The animals are carried in large slatted compartments in the hold of a small schooner, which has openings in the side through which sea water flows freely in and out again. Up to 80,000 living crawfish are exported each year (see text, page 360).

Photograph by Dr. Waldo L. Schmitt

THE CABBAGE TREE IS ONE OF THE ISLAND'S MANY BOTANICAL NOVELTIES

This Colecillo (*Dendroseris littoralis*), a species peculiar to the Juan Fernández group, grows in the garden of Señor Charpienter, shipwrecked on the island nearly thirty years ago. Of the 142 species of indigenous plants in the Juan Fernández Islands, about two-thirds are endemic—that is, are not found elsewhere. In this respect Juan Fernández is perhaps surpassed only by the Hawaiian Islands. "It is," says Dr. Carl Skottsberg, "as if one had been carried back to past geological periods, as if one walked about in a living museum crowded with rare specimens. So many wonderful plants are brought together here on a small area that one must touch them to realize that one does not dream."

fish, fierce and voracious; then the fighting *vidriola*, or what we would call amber jacks, or yellowtail, which occur all up this coast. Around Juan Fernández the latter often weigh 100 pounds or more.

Many kinds of sea bass also abound, with no end of delicate pan fish—the furel, corbina, weakfish or croaker, the pampanito and palometa, the smelt, the jerguilla. Here, too, the flying fish is eaten.

There is nothing more interesting than the violet snail, here about the size of buckshot, that lives on the sea surface. Like the familiar garden snail, the *Ianthina*, or violet sea snail, exudes a secretion which, inclosing air bubbles, makes a little raft that buoys him up. This raft also carries the female's eggs. Thus the eggs float until hatched, when the young in turn make rafts of their own.

The most common food of this purplish sea snail is a form of jellyfish. Against its enemies, birds and fish, Nature guards it by camouflage. Being whitish under-

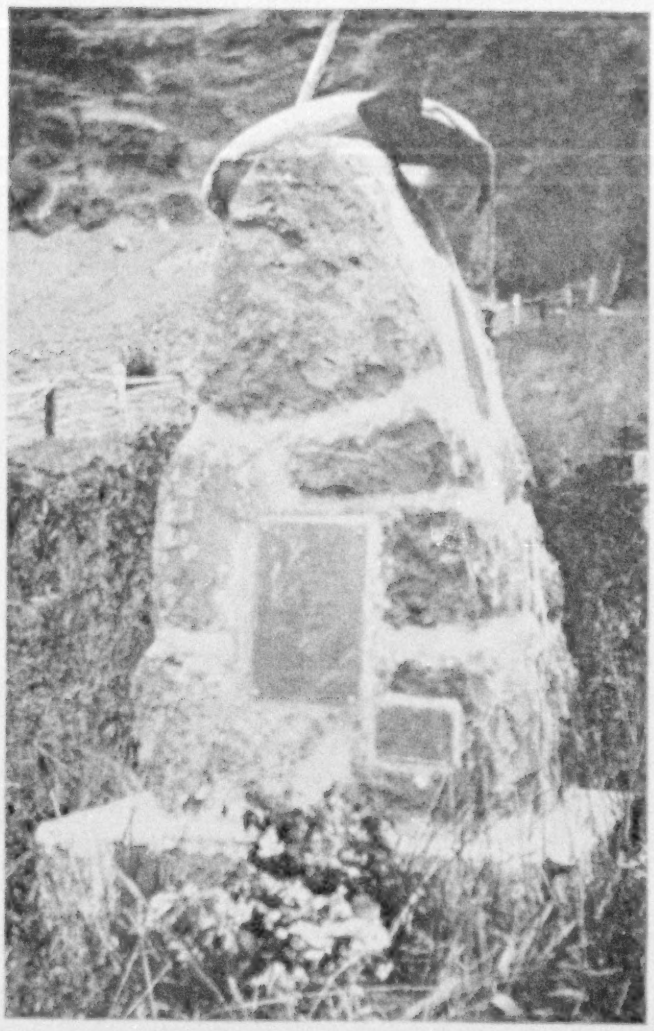
Photograph by Dr. John D. Long

CLIMBING A CLIFF ON JUAN FERNÁNDEZ

Photograph by Dr. Waldo L. Schmitt

MEDICAL TREATMENT IS ADMINISTERED ON JUAN FERNÁNDEZ BY WIRELESS INSTRUCTIONS

There is no physician on the island, but there is a fully equipped operating room, medical store, and a serviceable medical library. All treatments are, of necessity, by wireless, the characteristic symptoms of the case being diagnosed by a Valparaiso physician, 400 miles away. The efficacy of the "absent" treatment has saved more than one serious case. The islanders have yet to handle their first serious operation, but for that a competent surgeon probably would be sent out by the Chilean Navy or else a ship's doctor called from a passing vessel. Juan Fernández is not far from the northward-bound route of many vessels. Almost daily from the Lookout (see page 354) they can be seen passing in the offing. American readers will recall the American Red Cross poster in the window, which was sent to Juan Fernández from Washington.



Photograph by Dr. John D. Long

A TABLET TO WORLD WAR FIGHTERS ON JUAN FERNÁNDEZ

A monument to sailors of the German cruiser *Dresden*, overtaken here by British cruisers during the war. The *Dresden* now lies at the bottom of Cumberland Bay.

neath, fish swimming below do not readily see it; dark on top, as pelagic fish are, it is apt to escape the notice of birds flying above. But both fish and birds, working for a living, eventually catch the purple snail. That's the world's way. After a storm on tropical seas one may sometimes observe along the sandy beach at high-tide mark a purplish band formed by millions of these sea snails washed ashore.

Combing the sea for specimens, I worked around the greater part of Juan Fernández.

On the offshore banks are huge cod, and islanders boast of a record specimen weighing 62 pounds. However, there is nothing, it must be remembered, in the climate and history of Juan Fernández to hinder the imagination. Its legends of buried treasure, of bold buccaneers and lupine life in pirate times, easily inspire tall tale telling.

There is probably more excuse for fiction about Juan Fernández than about any other place its size on earth. For 360 years pirates, earthquakes, whalers, penal colonies, battle, and political storms have swept this now calm and dreamy island. In the hillside above Cumberland Bay one sees the tiers of cells, like the Roman catacombs, dug to hold prisoners when Chile used the island as a penal colony. Out in the harbor lies the hulk of the German cruiser *Dresden*, sunk during the World War.

Once vast packs of sea lions haunted the island rocks. Anson, English buccaneer, wrote home that there were so many of these creatures here that he couldn't move a ship's boat without putting a man in her bows with an oar to drive them aside. Traders slew them for oil, and wild dogs killed their young on the beaches; so now the sea lions seldom frequent these waters.

To kill off the wild goats, and thus cut off the fresh-meat supply for the English and Dutch pirates who plagued the coast, Spanish rulers of Chile long ago sent bands of dogs to this island; but the plan failed. The dogs couldn't catch the goats among the rocks!

PIRATE CHESTS OF PLANTS AND ANIMALS

"Tell me how a divining rod acts when buried treasure is near," one islander begged me. "I know there's treasure hidden around French Bay, and my wife's a water witch. She knows how the hazel fork twists to indicate water. Can't you please tell us how it acts over gold?"

There may be buried pirate chests. *Quién sabe?* But priceless treasure, indeed, was left by Anson and other early explorers. They planted vegetables and fruit seeds, and let loose pigs, cows, and horses.

It was an unwritten law, tradition says, that every ship calling here in old days, whether merchant, whaler, or buccaneer, should leave animals or plants, and thus help stock the island for the common good. In consequence the variety of useful plant life here is unparalleled in the Pacific. Cows, pigs, and horses are plentiful also. The day I spent at Crusoe's cave boys were chasing wild horses around the grassy canyons where Crusoe and Friday hunted goats.

Photograph by Dr. John D. Long

THE TOWN ON MAS-Á-TIERRA HAS A POPULATION OF THREE HUNDRED PLUS MANY GOATS AND A FEW MULES AND HORSES

The deep notch in the mountain to the left of the center is known as Robinson Crusoe's Lookout, where a bronze tablet to Selkirk's memory has been erected by the British Navy (see page 357).

Photograph by Dr. Carl Skottsberg

ONE OF MANY JUAN FERNÁNDEZ FERNS

Thyrsopteris elegans Kunze, a monotypic member of the Cyatheaceæ ferns. The stem is short and thick and the leaves reach a very considerable size.

Photograph by Dr. Carl Skottsberg

THESE PLANTS WITH GIANT LEAVES ARE FOUND ALONG STREAM BEDS OF TWO ISLANDS IN THE JUAN FERNÁNDEZ ARCHIPELAGO

The leaves measure six to ten feet across and provide good shelter. There are three species in the islands, two in Más-á-Tierra, and a third, *Gunnera Masafuerœ* Skottsberg, shown above, in Más-á-Fuera. The green and juicy leaf stalks are chewed by the islanders to quench thirst.

In a single garden, a spot of dazzling beauty, belonging to a Frenchman shipwrecked here more than 30 years ago, I saw an astounding grouping of exotic and native plants and trees. Here grew, among other things, the botanically famous chonta palm, of which highly polished walking sticks are made. The creamy-white wood feels like satin and is marked with glistening black lines. I brought seeds to try this palm in America.

In this same botanical show place you see a Spanish cork oak grown from an imported acorn; the delicate papaya and fig ripening above beds of luscious white strawberries, to say nothing of oranges, lemons, apples, and cherries.

Small wonder the baffled and beaten buccaneers, after a sound thrashing at the Spanish forts of Guayaquil or other coastal towns, enjoyed coming here to rest, heal their wounds, and change their diet from "salt horse" and weevils to lobster salad, roast young goat, and fine fruits. Until greedy traders cut it all, even the sweet-smelling sandalwood, famous since Solomon's day, grew on this island.

Far up the moist island slopes I found giant green ferns, bizarre and outlandish, like the fantastic plant life pictured to us as shading the earth in the time of mud and reptiles. Except where trails have been cut or fires have burnt them off, these ferns are so big and thick that it is hard to walk among them.

HUMMING BIRDS SLAIN FOR TOURIST TRADE

And then the Crusoe Island humming birds. The fern forests are full of them. Two gorgeous species inhabit the island. One is endemic to it. Hundreds are slain each season to supply the tourist trade.

The birds are killed and stuffed, then mounted in a grotesque manner, much like the old-fashioned American "game picture" that hung in the dining room a few generations ago. Into this Crusoe Island humming-bird group the native puts a queer little nest made of moss, in imitation of the natural one; and into this nest he puts humming-bird eggs made of pellets of dough.

The real nest of the humming bird, difficult to find, is wonderfully fabricated of the green moss that festoons all the island tree ferns. It is lined with woolly fuzz from the same source.

Sailors report having seen these birds halfway between Juan Fernández and Valparaiso, flying for the mainland. The tale may well be true, for this island bird is well known in Chile. And we know, too, that our own ruby-throated humming bird makes trips of several thousand miles, nesting as far north as Saskatchewan and wintering in Central America.*

Nor is the sea hereabout less copious than the island with strange yet beautiful life. One day, at low tide, I hammered open a volcanic rock seeking crabs and shrimps in their under-water holes. Out rushed an odd spider, only to be seized and bottled, as one of the rarest finds I ever made. It was a species new to the Western Hemisphere, a marine spider whose closest relatives to-day live in New Zealand and Australia.

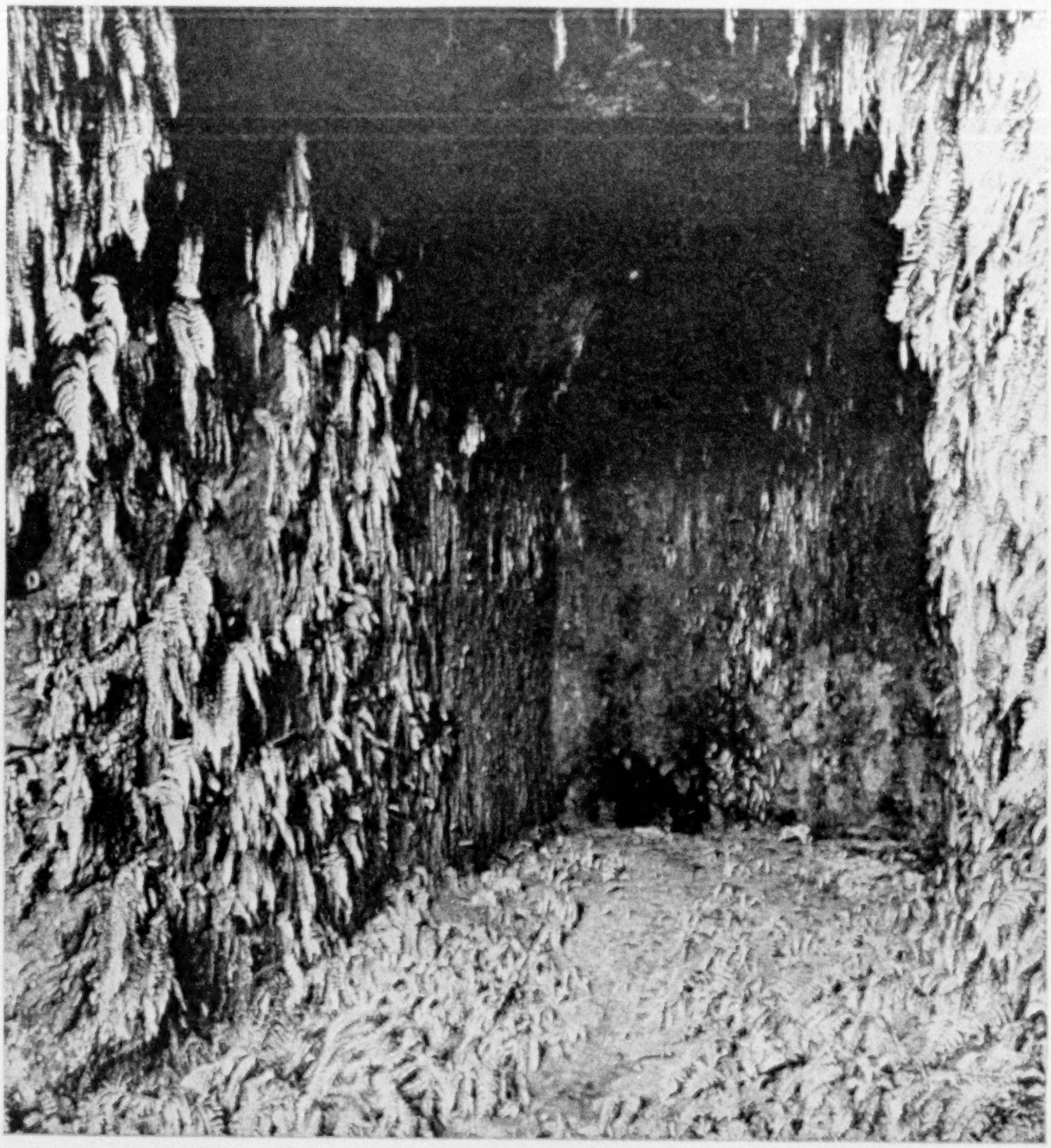
Juan Fernández has a few good beaches, but mostly its shores are rocky, rough, or steep, with swift currents whirling past towering volcanic cliffs. Many a stout ship has piled up here. Now and then I saw the moss-grown signs of forgotten wrecks.

Long ago Captain Shelvocke's *Speedwell* went to pieces on these rocks. At that time cats, multiplied from a few left ashore by earlier ships, fairly overran the island. Shipwrecked sailors from the *Speedwell* lived for weeks on cat meat. Their hunger found more substantial relief from one meal of cat meat than from five meals of seal or fish, wrote Shelvocke in his journal.

There are no wheeled vehicles on the island, and nowhere on its whole 40 square miles did I see a road—only paths. There is a school and a seldom-attended church, but there are no places of amusement. No stores; just one room in the lobster factory at Cumberland Bay, open twice a week, where natives may buy articles from the mainland through an agent of the lobster-catching company.

More than once the island has been leased for trade or farming purposes, and during Spanish rule in Chile an official attempt was made to populate it by send-

* See, also, "Holidays with Humming Birds," by Margaret L. Bodine, in the NATIONAL GEOGRAPHIC MAGAZINE for June, 1928.



Photograph by Dr. Waldo L. Schmitt

IN ONE OF THE JUAN FERNÁNDEZ "CAVES"

These openings are dug into the brow of a hill facing the harbor. Rank ferns hang upon the sides; a cold and deathlike sweat drops from the weeds above. The caves are connected by passages scarcely four feet in height.

ing over young women, just as England sent them to marry Virginia settlers.

But somehow modern progress has passed this island by. Most of its green, wooded valleys are uninhabited. Probably a third of the people are descended from two or three early castaways and old-timers. Once a year a priest comes from the mainland to baptize, to marry, and to conduct the only church services of the year.

Whether Defoe really used Selkirk and his sojourn on this island from which to weave "Robinson Crusoe," I don't know. Many believe he did. If so, and Crusoe and Friday could come back to-day they would find little natural change in their island paradise beyond increased population.

Otherwise the lotus life on this beautiful island, with its abundant fruits and plants, its goats and great schools of edible fish, is just as pleasant as in that romance by Defoe, wherein Crusoe mastered Nature and gave the world one of its first classic lessons in applied geography.

TOMATO SOUP
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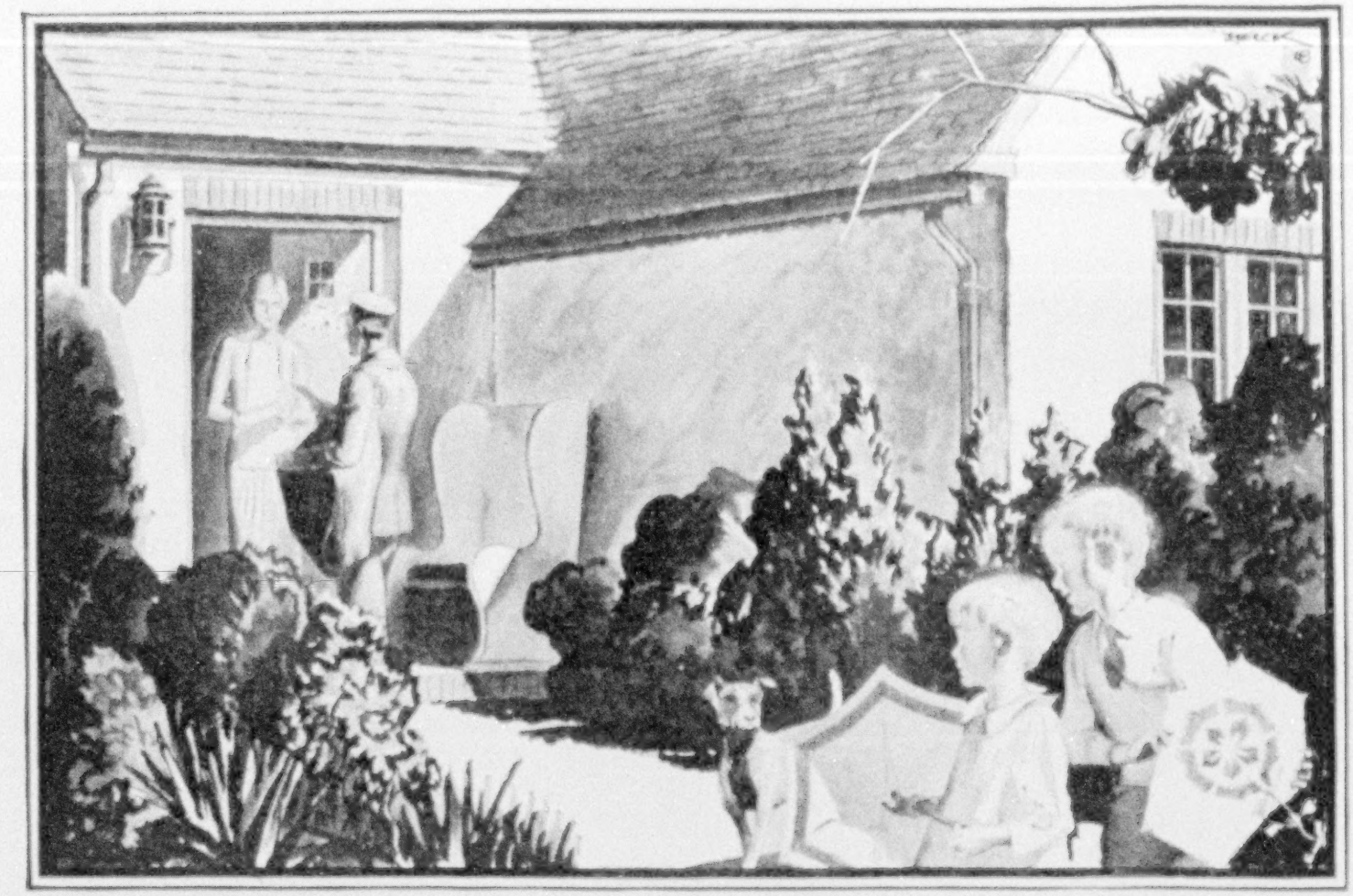
WITH THE MEAL OR AS A MEAL SOUP BELONGS IN THE DAILY DIET



Where the Bell System's profit goes

An Advertisement of the

American Telephone and Telegraph Company

THERE is in effect but one profit paid by the Bell Telephone System. This profit is not large, for it is the policy of the Bell System to furnish a constantly improving telephone service at the least cost to the public.

The treasury of the American Telephone and Telegraph Company receives dividends from the stock of the operating companies. It receives a payment from the operating companies for research, engineering and staff work. It receives dividends from the Western Electric Company—makers of supplies for the Bell System—and income from long distance operations.

Only one profit is taken from this money in the American Telephone and Telegraph Company's treasury. That is the regular dividend to its stockholders—now more than 420,000 in number—which it has never missed paying since its incorporation in 1885.

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The Bell System accepts its responsibility to provide a nation-wide telephone service as a public trust.

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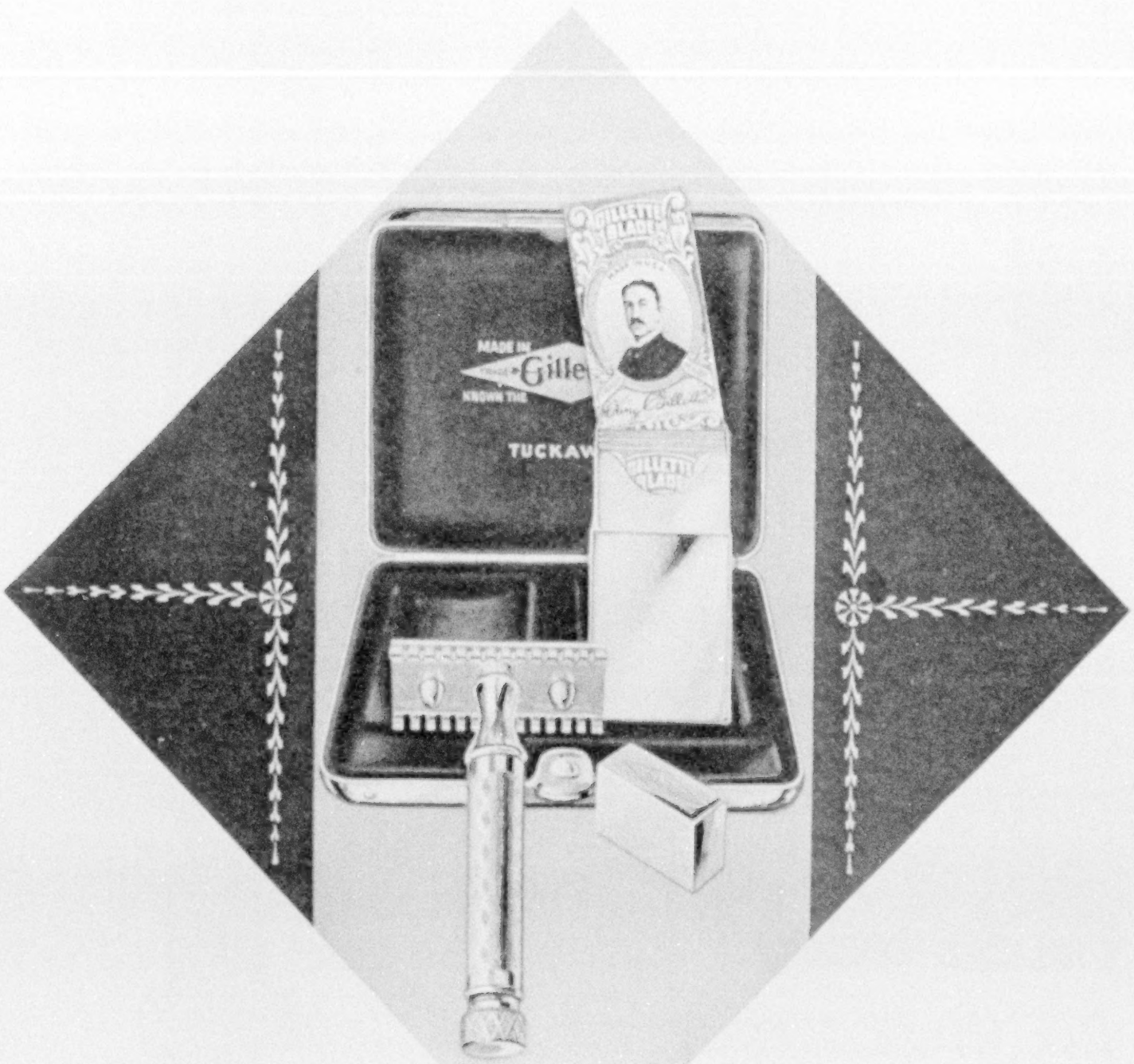

SOME thinkers claim that they do their heaviest thinking at 7 A. M. in the bathroom while shaving. If this is true, Gillette has probably been present at the birth of more sound ideas than you could shake a shaving-stick at. And one of the soundest ideas of all is that a razor which shaves so smoothly it never interrupts your train of thought, and which lasts a lifetime, is a pretty good razor to stick to—for life. The Tuckaway is shown above. A compact and complete set in a heavily gold plated case, purple velvet and satin lined. Blade box contains ten Gillette Blades (twenty shaving edges), $5. Same set in heavy silver plate, $5. Gillette Safety Razor Co., Boston, U. S. A.

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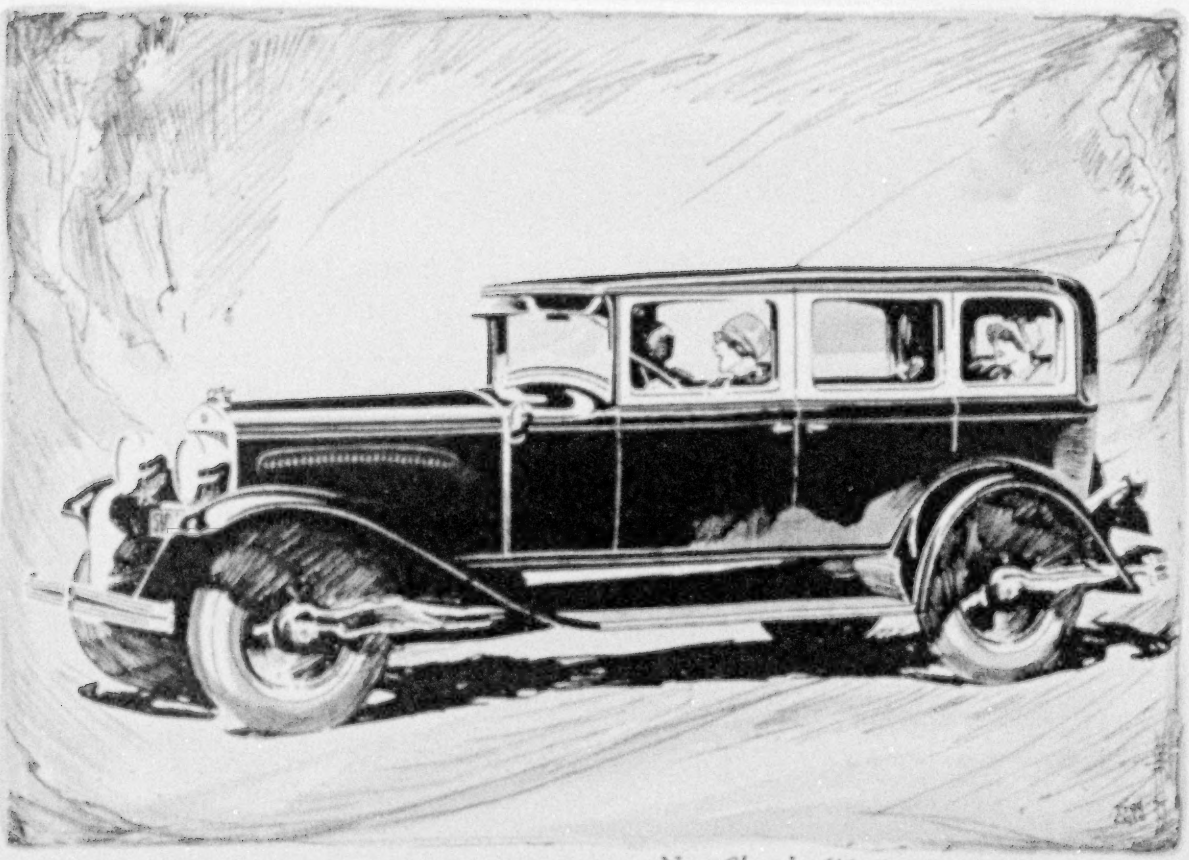

New Chrysler "65" 4-Door Sedan $1145

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For sheer artistry of design, for luxury of grooming, for behavior that out-Chryslers even Chrysler, for downright value at their lower prices—Chrysler has once more wiped out every existing standard by which motor cars have been judged.

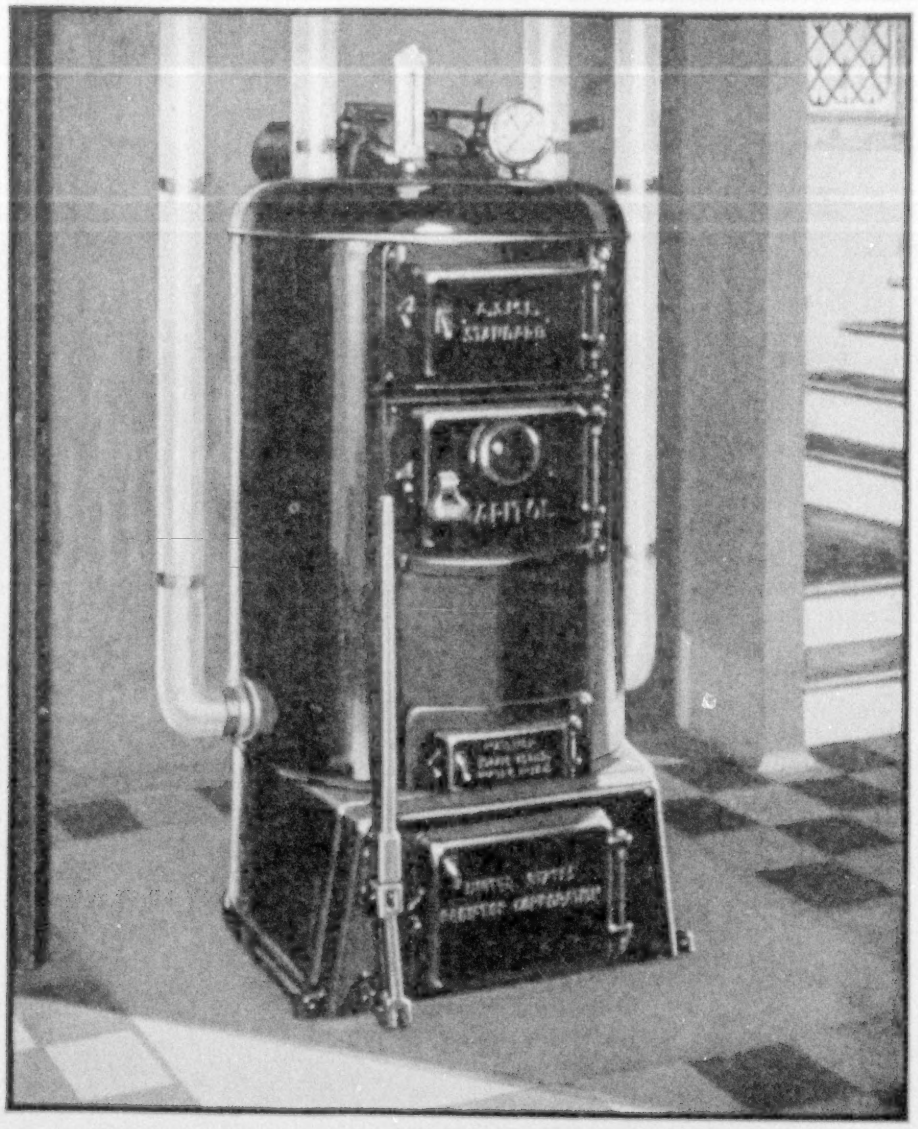
At a single bold stroke, it has initiated the style that re-styles all motor cars.

New Chrysler "65" Prices — Business Coupe, $1040; Roadster (with rumble seat), $1065; 2-Door Sedan, $1065; Touring Car, $1075; 4-Door Sedan (illustrated), $1145; Coupe (with rumble seat), $1145.

New Chrysler "75" Prices — Royal Sedan, $1535; 2-Pass. Coupe (with rumble seat), $1535; Roadster (with rumble seat), $1555; Town Sedan, $1655. All prices f. o. b. Detroit (wire wheels extra).

Chrysler

THE CAPITOL RED CAP—MASTERPIECE OF RESIDENTIAL BOILERS



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THE CAPITOL RED CAP

Today ushers in the crowning achievement of our thirty-eight years of progress in house heating —the *Capitol Red Cap*—built upon the precise principle, the identical design, that has been tried and proved in homes from coast to coast.

The Capitol round boiler, with a snugly fitting *round* jacket, scientifically insulated, now stands in symmetrical beauty, trim and graceful, every line refined even to the door hinges. Cloaked in cobalt blue, capped with cardinal red, it is finished in baked enamel as finely as a Rolls Royce fender. A wipe of a cloth will remove every vestige of dust from its mirror-smooth surface.

A thick blanket of rock wool, more costly and effective than any insulation used heretofore on jacketed boilers, insulates it.

Moreover, *Capitol guaranteed heating*★ scientifically and automatically selects the right-sized *Capitol Red Cap* to properly warm your home. This written warranty leaves nothing to chance, avoids the selection of too large a boiler for your needs, eliminates the danger of one too small to meet the emergency of drops in temperature.

The *Capitol Red Cap*, like all Capitol Boilers and Radiators, is sold and installed only by responsible heating contractors. They are our representatives in your community. Their skill in installing supplies the final assurance of your satisfaction in the masterpiece of residence boilers, the *Capitol Red Cap*.

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Guaranteed Heating WITH

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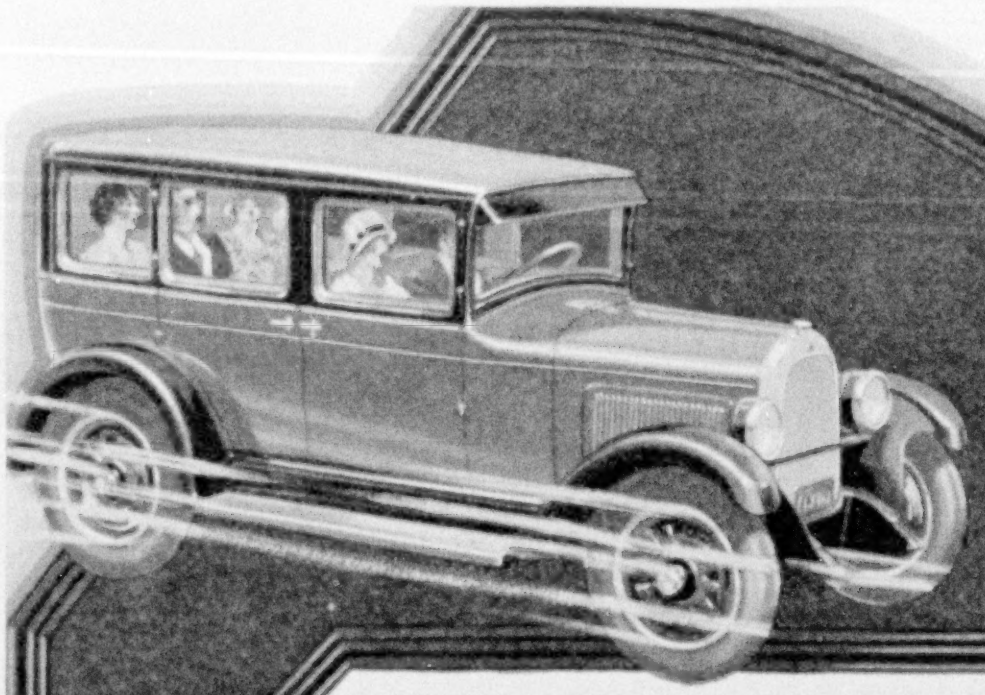
4-cylinder Sedan

$610



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In dollar-for-dollar value there are no 4-door enclosed cars on the market comparable to the Whippet Four and Whippet Six Sedans.

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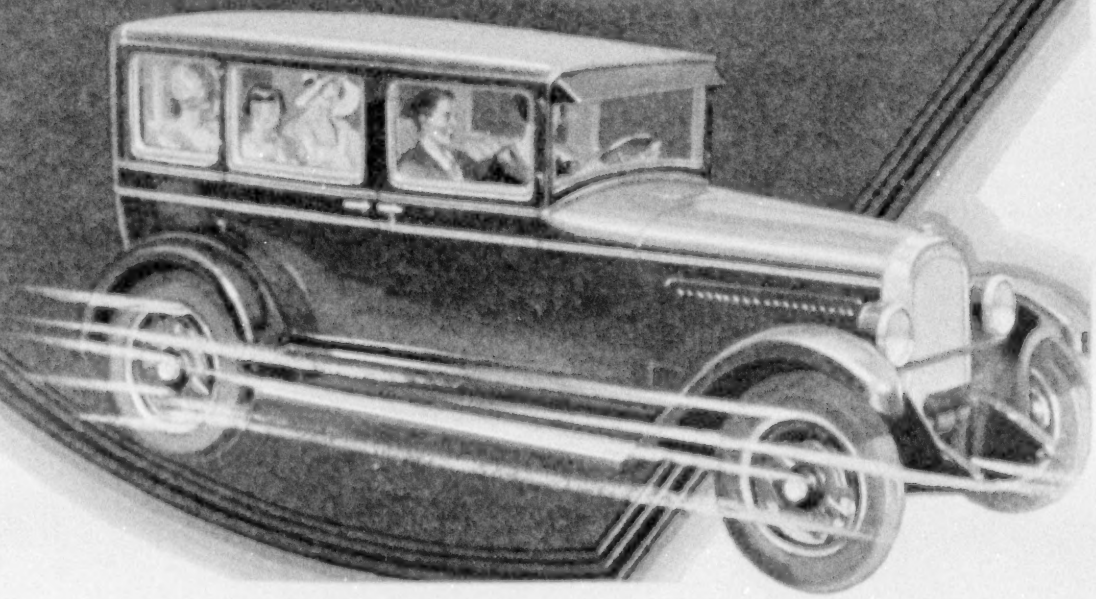
The Whippet Four offers such desirable features as full force-feed lubrication, silent timing chain, extra leg room and powerful 4-wheel brakes. The new Whippet Six, in addition to these, provides a 7-bearing crankshaft, invar-strut pistons and many other advantages.

Whippet Fours from $455 to $610; Whippet Sixes from $615 to $770. Prices (f.o.b. Toledo, Ohio) and specifications subject to change without notice. Willys-Overland, Inc., Toledo, Ohio. Willys-Overland Sales Co., Ltd., Toronto, Canada

Whippet FOURS and SIXES



6-cylinder Sedan

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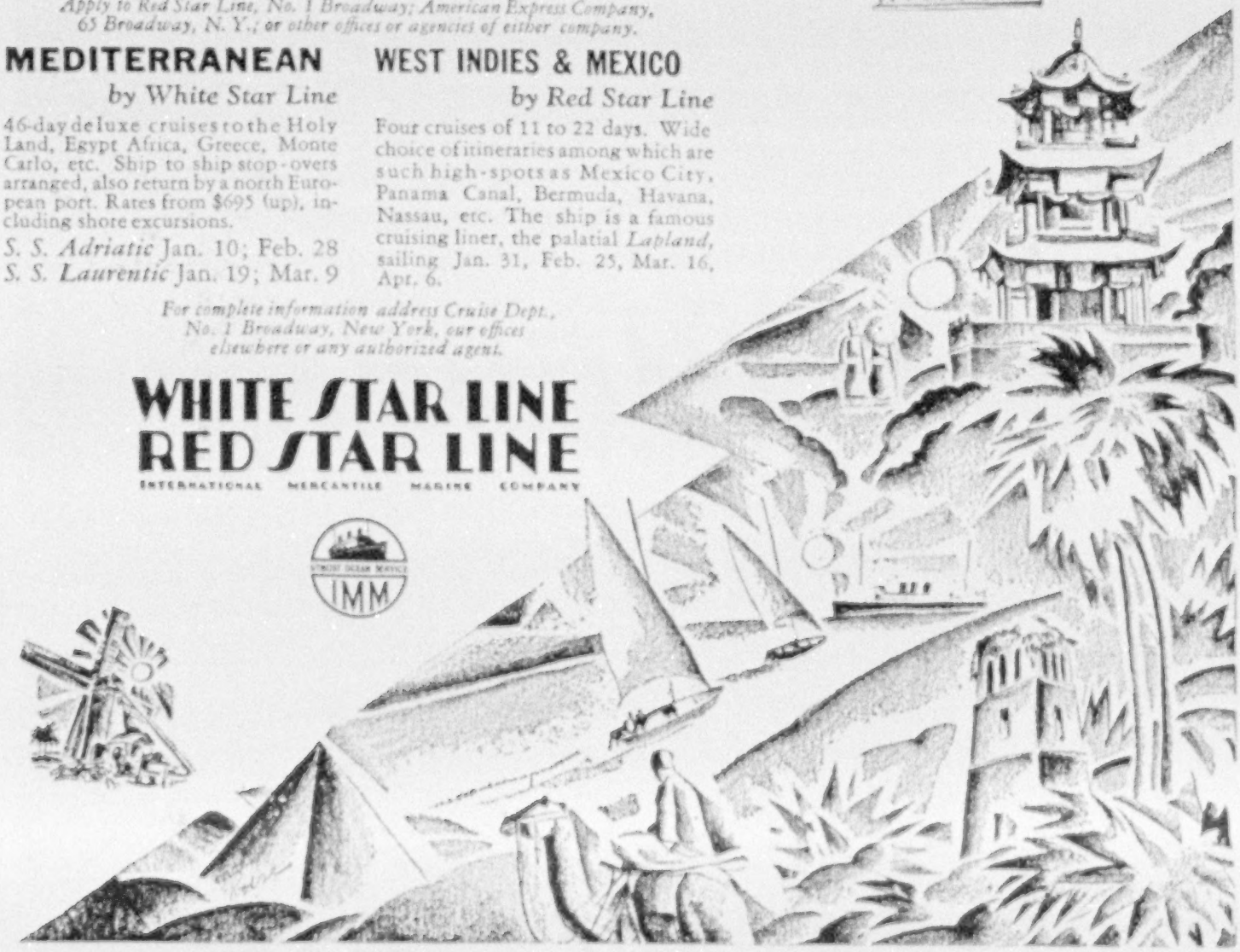

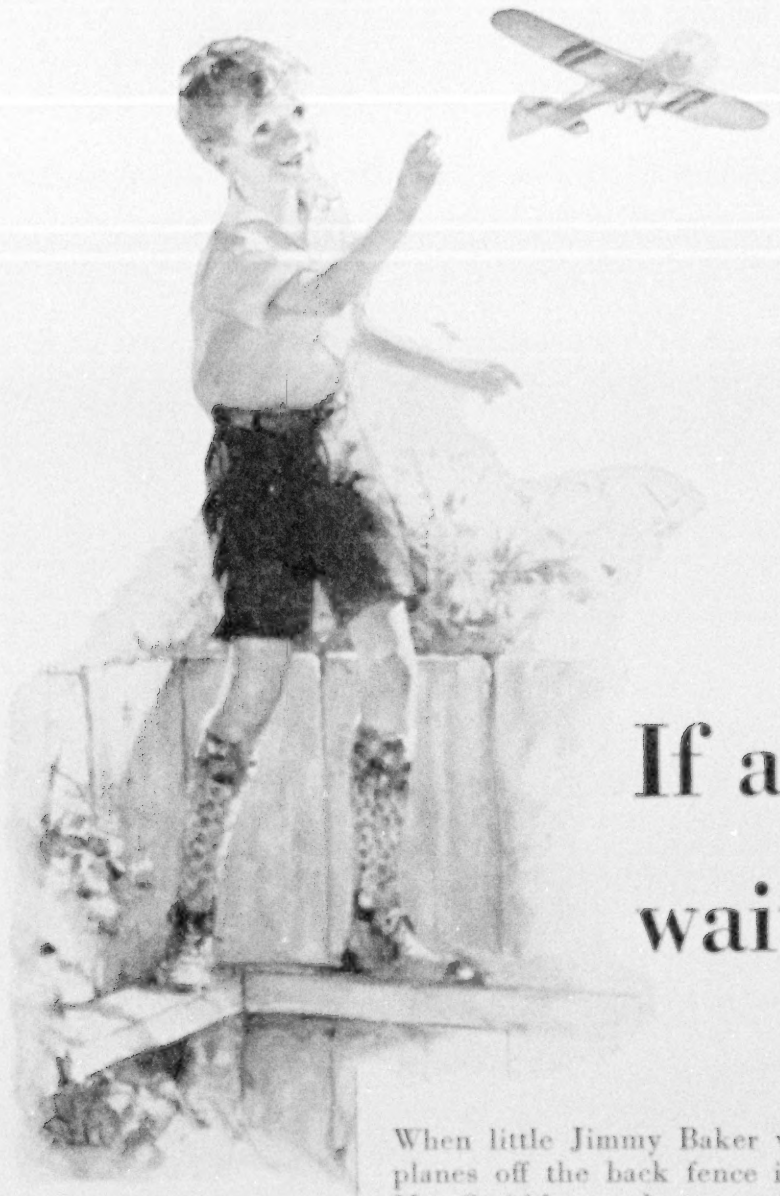

A PERSONAL NOTE

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If a rusty nail waits for Jimmy

When little Jimmy Baker volplanes off the back fence into Mrs. Smith's strawberry patch—and lands on a rusty nail—his mother knows that she ought to seek a doctor's advice right away.

More and more mothers are learning that the deadly disease called lockjaw, known to physicians as tetanus, can almost always be prevented if treatment is given in time.

What the World War taught us about lockjaw

Statistics vary somewhat, but medical science believes that antitoxin reduced tetanus among wounded soldiers in the World War by approximately 87½ per cent.

During the ten years since the war, Parke, Davis & Company have steadily improved the quality and effectiveness of tetanus antitoxin. Methods of administering it have also been improved. So, for those who receive the benefit of modern preventive measures, the danger from lockjaw has practically disappeared.

We have prepared a very interesting booklet about the prevention of disease, called *Fortresses of Health*. We shall be glad to send you a copy if you will mail your request to Parke, Davis & Company, Detroit, Mich.; Walkerville, Ontario; or London, England.

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In the scientific work which has so effectively improved medical practice during the past two generations, Parke, Davis & Company have made many pioneering contributions. In America's first biological laboratory we began the manufacture of diphtheria antitoxin, for example, immediately after its discovery in 1894, and have since increased its concentration fully 1000 per cent.

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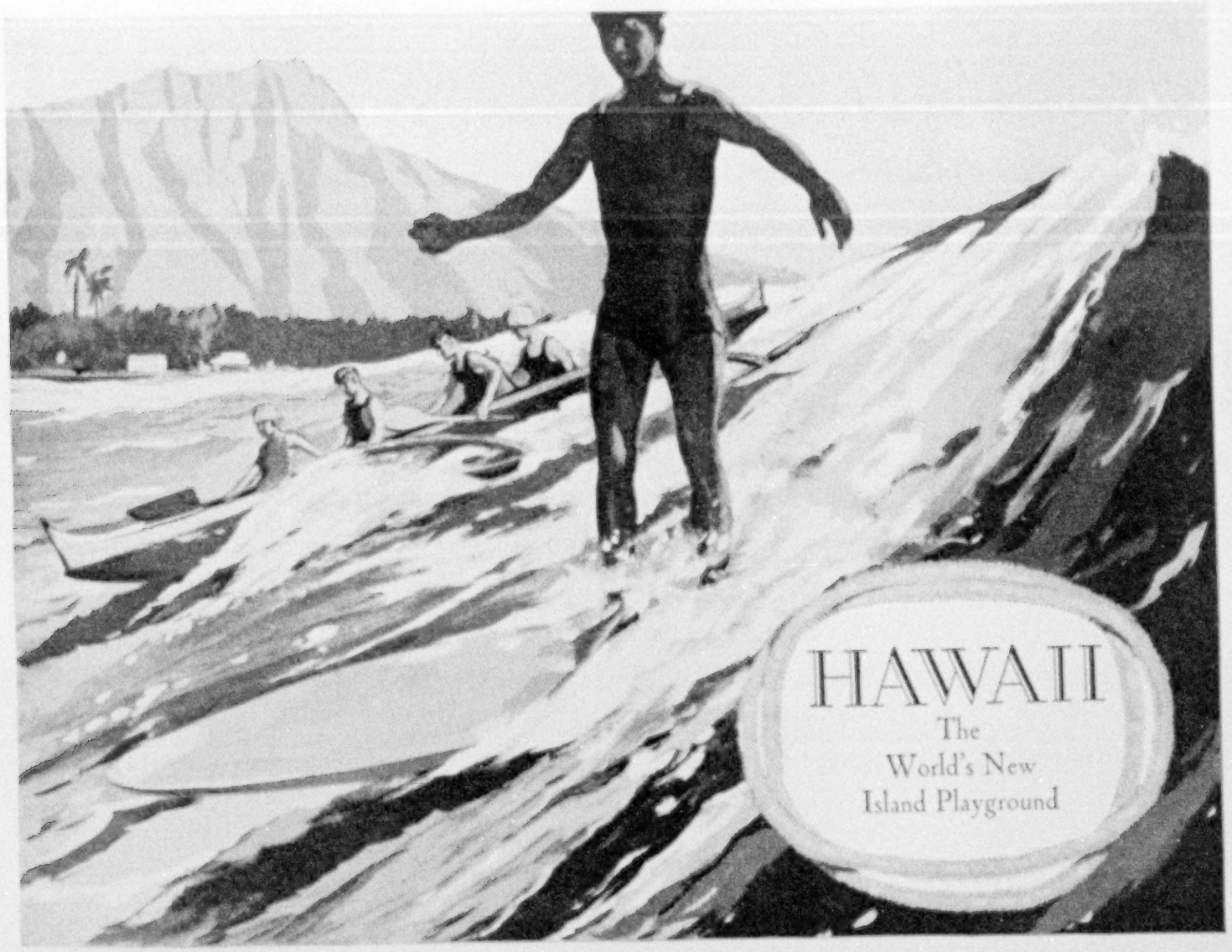

Race the surfboards in your outrigger canoe at Waikiki! Flying spray hisses underfoot—a warm speeding wave is head-high behind you—

A few breathless, exultant moments and you're laughing on the beach! Your spirits have found a new doot opened—a new thrill in living—in this mid-Pacific paradise so brilliant with interests!

Vacation-time, in Hawaii, is *every* month in the year. And every day there are things to do that you've never done before. Delightfully lazy ways to do nothing at all, where you can count on a thermometer that stays below 85° in summer and above 65° all winter.

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From water sports in the warm winter to tennis in cool mid-summer, you will find Hawaii always offering you pleasant days for golf, surfriding, outrigger-canoeing, motoring, swimming, sightseeing.

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Ask your local travel or ticket agent. He can book you direct from home, via San Francisco, Los Angeles, Seattle or Vancouver, B.C. No customs, passports or formalities for U. S. citizens.

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Sailings every Wednesday, and every other Saturday, over smooth balmy seas on famous Matson ships. Fast de luxe steamers and popular one-class liners. Regular sailings also from Seattle. Attractive all-expense shore trips. See your travel agency or Matson Line: 215 Market St., San Francisco; 535 Fifth Ave., New York; 140 South Dearborn, Chicago; 510 W. Sixth St., Los Angeles; 814 Second Ave., Seattle; 82½ Fourth St., Portland, Ore.

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The Truth About Dull Film on Teeth

As viewed by the foremost dental authority of the day

Now leading opinion lays to film many serious tooth and gum disorders, as well as dull, "off-color" teeth. Remove it by this special film-removing dentifrice dentists urge

WHAT robs teeth of ivory brightness? What makes them more discolored one time than another?

And why, when looking their worst, do teeth decay more rapidly, why do gums grow sore and sensitive?

These questions dentists answer in three words—"film on teeth." What film is, how it acts, are told below.

To combat it successfully where ordinary brushing methods fail, a *special film-removing* dentifrice is used, called Pepsodent.

Look for FILM this way

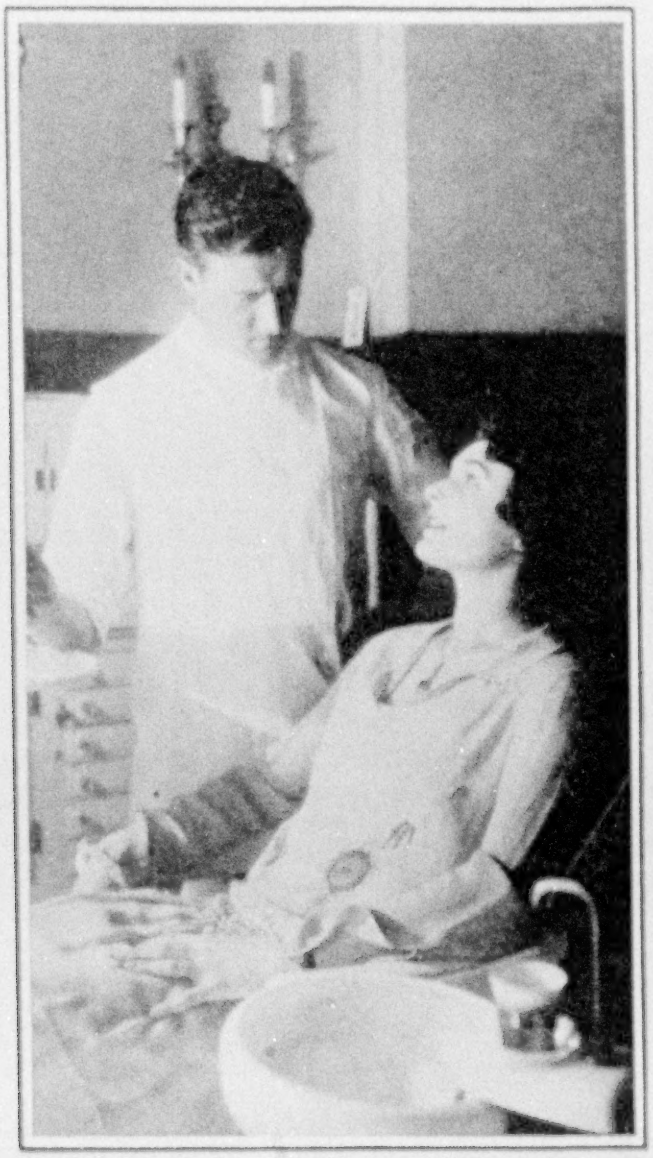
Run your tongue across the teeth. If you feel a slippery, slimy coating—that is film. An ever-present, ever-forming evil in your mouth.

It clings tightly to teeth and defies all ordinary ways of brushing. It gets into crevices and stays. It absorbs stains from food and smoking and turns teeth dull and gray.

Germs by the millions breed in film, and germs with tartar—a prolonged film deposit—are the chief cause of pyorrhea.

Film invites the acids of decay.

And you may remember that before this special film-removing method the prevalence of dental troubles was alarmingly on the increase.



Dentists know the secret of dazzling white smiles. "Keep dull film off your teeth," they say. That's why the use of Pepsodent, the special film-removing dentifrice, is so widespread today.

Now film removed new way

Film cannot resist brushing the way it did before. Pepsodent first acts to curdle film. Then to remove it in gentle safety to enamel.

This recent scientific way is the greatest step made in a half century's study of tooth-cleansing methods. Its results are seen on every hand.

Fights decay—firms gums

Other new-day agents in Pepsodent increase the alkalinity of saliva. They neutralize food starch from fermenting and forming acids of decay.

Still other properties firm the gums.

Thus, Pepsodent answers fully the requirements of the dental profession of today. That's why it is accepted among dentists of 58 nations.

Between your dentist, and Pepsodent used twice a day, you obtain the ultimate in tooth and gum care as modern dental science knows it.

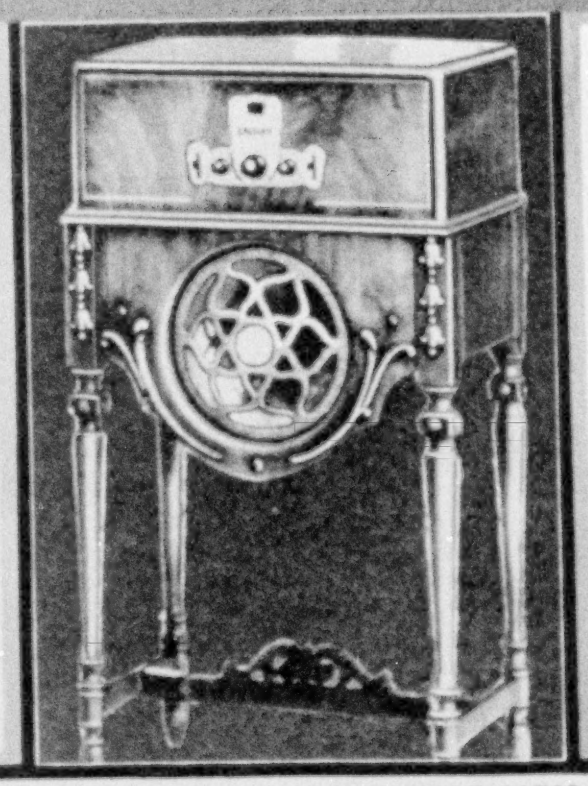
Get a large tube at your druggist's. Or write to nearest address below for a free 10-day tube to try.

The Pepsodent Co., 1104 S. Wabash Ave., Chicago, Ill., U. S. A.; 191 George St., *Toronto 2*, Ont., Can.; 42 Southwark Bridge Road, *London*, S. E. 1, Eng.; (Australia), Ltd., 72 Wentworth Ave., *Sydney*, N. S. W.

Pepsodent

The Quality Dentifrice—Removes Film from Teeth

Place your Crosley Radio in approved Showers Cabinet *and* SAVE money!



This 38-inch Walnut Veneer CONSOLE RADIO with Crosley Dynamic DYNACONE

built in, and the new Crosley 6 tube AC Electric GEMBOX installed—ready to attach to your antenna, with nothing more to buy but tubes, is now being featured by Crosley dealers at **$115**

Cabinet with Dynacone built-in (without radio), **$50**

No other radio value can compare! The console is a genuine

SHOWERS CABINET

which has been endorsed by Powel Crosley, Jr., as ideally designed and built for Crosley Radio. Showers Brothers, largest furniture manufacturers in the world, can naturally build most economically and their straight-line production savings are as evident in this *value* as Crosley's are in theirs.

Other models at $58, $70 and $84 are gems of the cabinetmaker's art and can be seen at all Crosley dealers. If you cannot locate, send the coupon.

Prices, Denver and West, 10% Higher

SHOWERS RADIO FURNITURE

SHOWERS BROS. CO., Bloomington, Ind.
Dept. 74.

Name.....

Address.....

5 DAY FREE TRIAL

Please arrange with Crosley dealer to allow me FREE TRIAL of above console in my own home. I should like to see literature of fine furniture suites under $200.

☐ BEDROOM ☐ LIVING ROOM
☐ DINING ROOM ☐ KITCHEN CABINET

A great State sends you this Message

To the people of AMERICA

FOR centuries the glamour of romance has obscured the basic wealth of an inherently great state. Florida, the "Land of Flowers," named and claimed by Spanish explorers, achieving destiny under five flags, emerged from its chrysalis a world-famous playground. Now a migratory million, responding to the beckoning call of Florida's sunshine, claim winter comfort, happiness and health in North America's own sub-tropics.

¶ Now a new era dawns. America's "last frontier" has passed—converted through vision and energy into a region where youth and maturity alike are challenged to carve a new and greater destiny with the raw materials Nature has placed at hand. Now the business man, the industrialist, the financier, the scientist, the teacher, the tiller of the soil, finds new phases of commerce impending, new industries gaining a substantial foothold, and millions of acres of virgin soil awaiting the plow in a state already famous as one of the world's great garden spots.

¶ The blessed comfort Florida offers seekers of health and sunshine will remain always. But through a searching survey authorized and recently completed by the State, new and basic facts about Florida industries, commerce, agriculture, community resources, recreation and sports facilities, health and climatic benefits, are available to you.

¶ Know Florida and its opportunities. Your questions are invited.

[An official advertisement authorized by the Legislature of the State of Florida]

Department of Agriculture
Tallahassee

FLORIDA

GREAT SEAL

The SUNSHINE STATE

(Room 2)
Department of Agriculture, Tallahassee, Florida.
Please send information and booklets about

_____ Subject

Name _____

Address _____

Replace your old radio!

Seven and a half million sets now obsolete

1928 Features

Few radios AT ANY PRICE combine ALL of these features which are absolutely essential to today's new radio reception.

NEUTRODYNE AMPLIFICATION

Neutrodyne 10×10×10-1000

Other systems 5×5×5-125

Crosley Radios tune efficiently

Crosley Neutrodyne circuit is sharp, sensitive and selective. Distant stations are easily found. Local stations tune without squealing.

Crosley Radios are shielded

Each element shielded from each other provides maximum selectivity and is *featured* in the most expensively made sets.

Crosley Radios are very selective

in crowded districts where many local stations fill the air you find in Crosley radio a means of listening to ONE at a time.

Crosley Radios have great volume

Volume may be increased to tremendous proportions without distortion. This provides plenty of volume for power speakers.

Crosley Radios can be softened to a whisper

A positive volume control enables operator to cut any program down to faint and scarcely audible reception.

Crosley Radios have illuminated dials

Your set has served you well *but* you will *not be satisfied* with *its strained stringy tones when* you hear a *new full toned power speaker* Crosley set

$25 New Dynamic DYNACONE *Amazing Speaker*

6 tube GEMBOX AC ELECTRIC $65

Five Days' Free Trial in Your Own Home

Crosley originated the idea of a national policy of home demonstration. Compare a Crosley radio set with any other and you will choose the Crosley.

If you have electric current in your home, your set should be a modern AC electric receiver. A converted battery set is out of date. If you pay more than $65 for a radio set, it should have two 171 output tubes, push-pull instead of one, eight tubes instead of seven. To be up-to-date, your new radio set should be designed to take and supply the current for a power or dynamic type of speaker. Crosley sets are so designed. Other sets designed for power speaker use are much more costly. Your set should be completely shielded and incorporate the highly sensitive, genuine, neutrodyne circuit. It should have a modern illuminated dial. An examination of Crosley radio sets will show you many other modern exclusive features.

$25.00 New Dynamic Dynacone Amazing Speaker

The Dynacone is a new revolutionary speaker at a price less than many good magnetic speakers. Crosley manufacturing speed and straight-line methods permit the extremely low price.

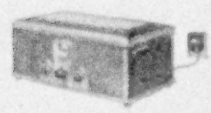
Why Pay More Than Crosley Prices?

We urge you to listen to a Crosley radio set, try it, put it to any test you can think of. No sets that approximate Crosley prices can compare in performance. Why pay a high price for a set that can compare favorably with Crosley?

Six Tube Gembox AC Electric, $65.00

Self-contained AC electric receiver. It utilizes two radio, detector, two audio and a rectifier tube—171 power output tube. Designed for use with the new Crosley Dynamic power speaker.

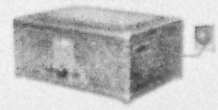
1928's greatest radio



8 tube SHOWBOX $80

AC Electric

Genuine Neutrodyne. Newly perfected audio frequency system creates marvelous tone quality. Modern illuminated dial.



8 tube JEWELBOX $95

AC Electric

Genuine Neutrodyne. Shielded coils, modern illuminated dial, highly selective and powerful.

6 tube BANDBOX $55

Battery Type Receiver

An improved model of the 1927 receiver that led the world to better radio. Genuine Neutrodyne—every modern fitting and refinement, including illuminated dial.

5 tube BANDBOX Jr. $35

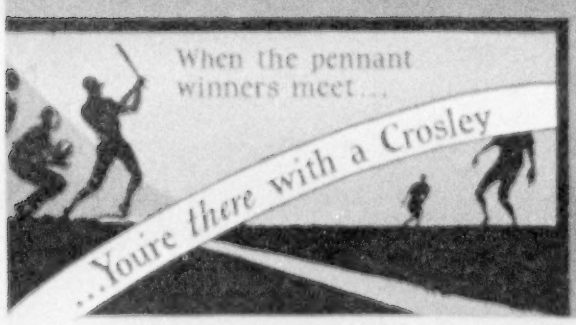
Dry Cell Receiver

Operates entirely from dry cells and is especially designed where no electric current is available.

Improved MUSICONE $15

The outstanding Magnetic type speaker available, still maintaining its leadership, today, as from its inception in 1925. Improved, it is without question the greatest speaker value you can find.

CROSLEY



The Crosley Radio Corporation

Powel Crosley, Jr., *Pres.*

Cincinnati, Ohio.

Montana, Wyoming, Colorado, New Mexico and West, prices slightly higher.

Your name .....

Address .....

5 DAY FREE TRIAL COUPON

Mail this coupon to the Crosley Neutrodyne dealer and have your receiver installed.

Please let me try receiver and proper speaker, I have checked, in my own home without obligation for 5 days.

JEWELBOX ☐ SHOWBOX ☐

GEMBOX ☐ BANDBOX ☐ BANDBOX JR. ☐

Enjoyment insurance for your trip to foreign lands

THE American Express—one of America's great institutions—has built up a vast organization of service to tourists who carry its Travelers Cheques. It maintains scores of uniformed representatives at important foreign ports, depots and frontier points. These travel experts serve the traveler in many ways. They help with passports, forward baggage, provide railroad and steamship tickets and supply helpful local information courteously and efficiently.

All this personal service is automatically YOURS when you change your money into American Express Travelers Cheques. In addition, this sky-blue currency safeguards your money against theft or loss and assures you of spendable funds *everywhere* you travel, whether to the Orient, Mediterranean, West Indies or on a winter cruise.

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8th Cruise
By the famous
"Rotterdam"
Leaving New York,
Feb. 7, 1929

Under Holland-America Line's own management

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24,170 tons reg., 37,190 tons disp.

Has a world-wide reputation for the magnificence and comfort of her appointments, the surpassing excellence of her cuisine and the high standards of service and management on board.

71 Days of Delightful Diversion

ITINERARY includes Madeira, Casablanca (the play-ground of Morocco and North Africa), Cadiz, Seville, (Granada), Gibraltar, Algiers, Naples (first call), Tunis, Athens, Constantinople, Haifa, Jerusalem, (the Holy Land), Alexandria, Cairo (and Egypt), Kotor and Dubrovnik, Venice, Naples (second call), Monaco, and the Riviera. Easter in Italy (April 1st). Carefully planned shore excursions included in Cruise Fare. Stop-over in Europe. Number of guests limited. Cost of Cruise, $955 up.

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1929

WEST INDIES
By the splendid oil burning turbine steamer Ships
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Kaffee Hag Coffee

has brought a new conception of sleep

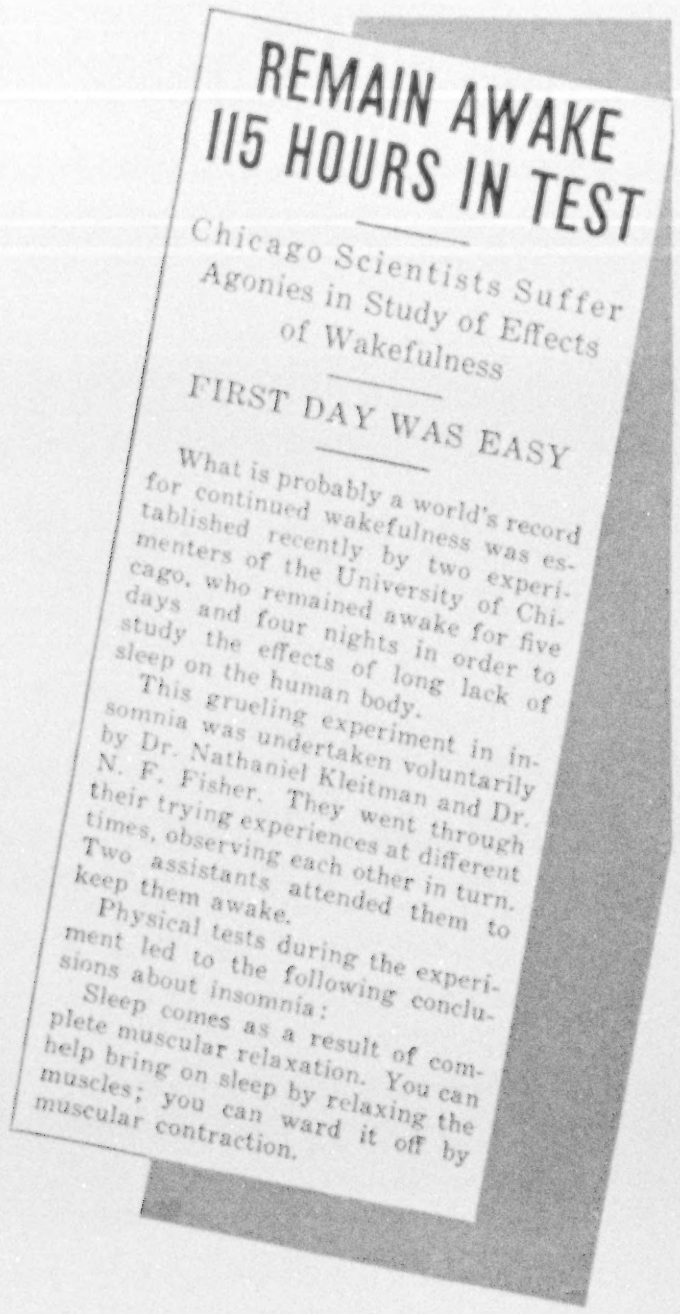
COMPLETE sleep! It is not a question of hours —but of relaxation. It comes when muscles are at ease and nerves are reposed. Many used to give up the pleasure of coffee because they felt that caffeine affected nerves and sleep.

But nowadays, people are simply changing their coffee brand to a pure, delightful coffee that is 97% free of caffeine — Kaffee Hag Coffee.

And they don't forego a single delight! Kaffee Hag is a blend of the world's finest coffees. All the strength, all the cheery coffee flavor, is present. Only the tasteless, odorless caffeine is gone.

You'll say you've never tasted finer coffee. And you can enjoy a strong cup even at midnight—it will not affect nerves or rest. Doctors recommend it. How much better than substitutes!

Full-pound freshly sealed cans at your dealer's. Ground or in the bean. Order at hotels, restaurants. On dining-cars. For 10c we will send you a generous sample. And with it a booklet on *complete sleep*. Mail the coupon.



REMAIN AWAKE 115 HOURS IN TEST

Chicago Scientists Suffer Agonies in Study of Effects of Wakefulness

FIRST DAY WAS EASY

What is probably a world's record for continued wakefulness was established recently by two experimenters of the University of Chicago, who remained awake for five days and four nights in order to study the effects of long lack of sleep on the human body.

This grueling experiment in insomnia was undertaken voluntarily by Dr. Nathaniel Kleitman and Dr. N. F. Fisher. They went through their trying experiences at different times, observing each other in turn. Two assistants attended them to keep them awake.

Physical tests during the experiment led to the following conclusions about insomnia:

Sleep comes as a result of complete muscular relaxation. You can help bring on sleep by relaxing the muscles; you can ward it off by muscular contraction.

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1810 Davenport Ave., Cleveland, Ohio

Please send me, postpaid, enough Kaffee Hag to make ten cups of good coffee. I enclose ten cents (stamps or coin).

Name_____

Address_____

KAFFEE HAG COFFEE

the COFFEE *that lets you sleep*

Days of Freedom

Double the pleasure of those glorious days of freedom by taking along a Zeiss Binocular! It will reveal undreamt of beauty and hidden charms of distant scenes, which would otherwise pass unnoticed. And all year round, your Zeiss will also ensure a front-row seat at football games, races and sporting events.

ZEISS

BINOCULARS

have an extremely large field of view, splendid luminosity and are dust- and moisture-proof. A lifetime of satisfaction and pleasure has been built into them.

For sale at leading dealers'.
Write for catalogue.

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485 Fifth Avenue, New York
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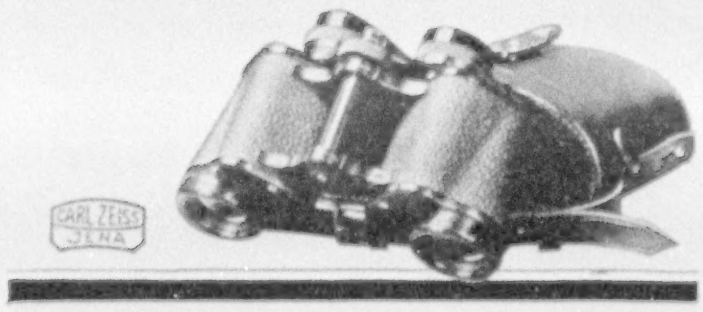
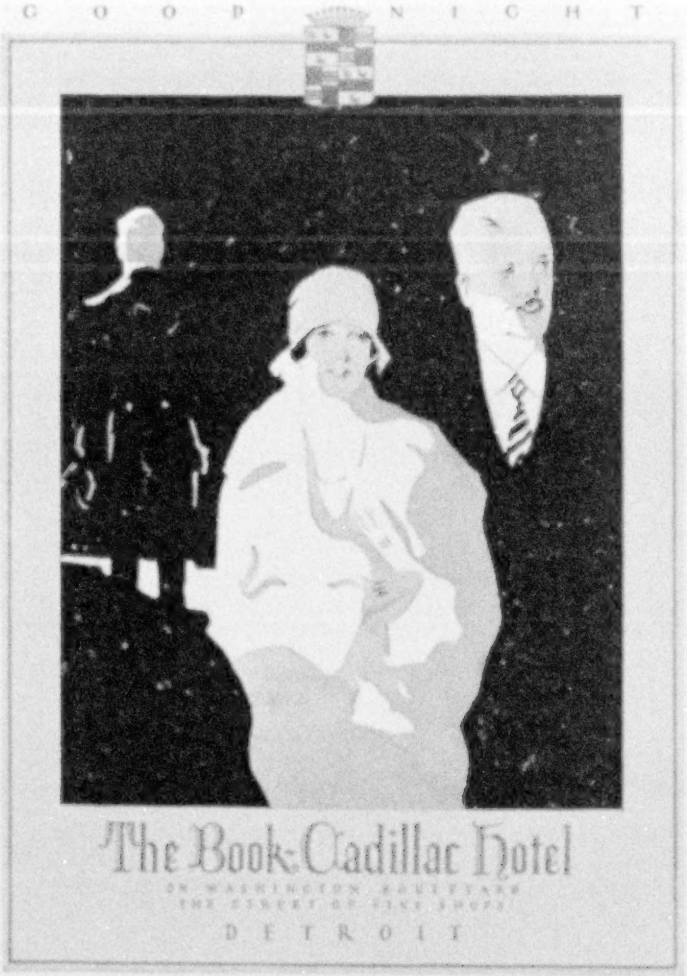


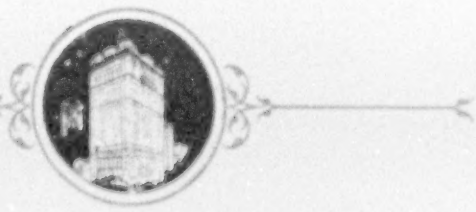
G O O D N I G H T

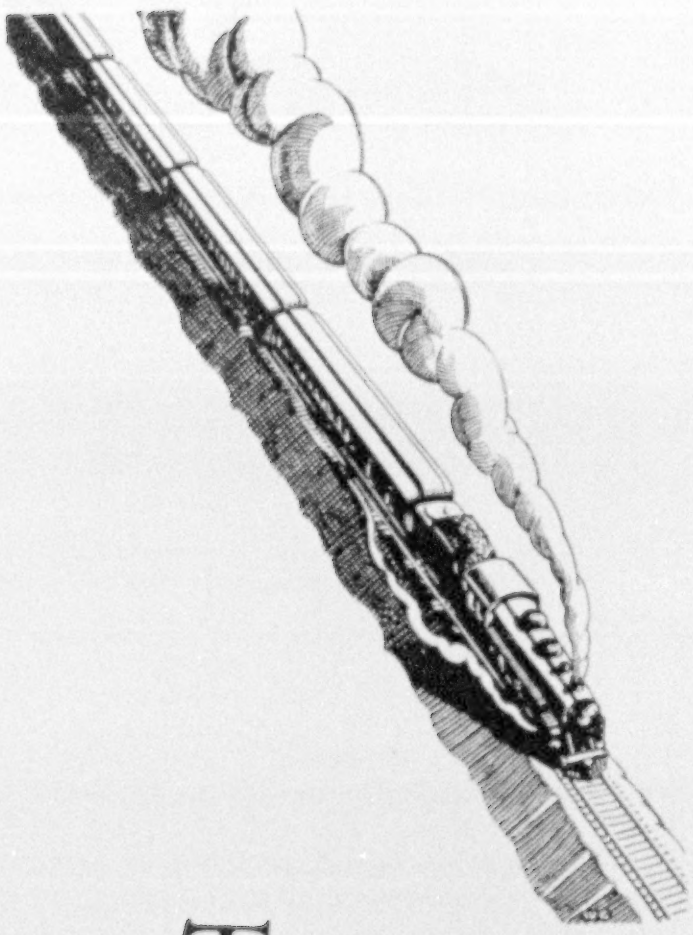


Good night

Come to sleep, to sojourn here. It's a restful, beautiful, finer place to stay. In all of old Earth, no other hotel excels its courtesy nor its swift, well-mannered service; none other could. Inimitable chefs, great Garces and John, plan things for you to eat so savoury, so delicious—and as many as for old King Cole . . . Then, at night, when you retire . . . you sink into warm cozy depths, you pull soft linens and comforts up 'round chins and ears, you poke your toes exploringly from warmer to colder spots and back again, and you smile and you sigh and you turn and you listen to the far-away whoooooee of ferry boats from Canada and sounds get fainter and fainter and you smile and you sleep . . . *Good night.*

THE BOOK-CADILLAC HOTEL
DETROIT





THE phenomenal ability of an Oshkosh Trunk to last, and make clothes last, pronounces it an essential possession of the man of moderate means. As for the rich man—but of course he has one anyway.

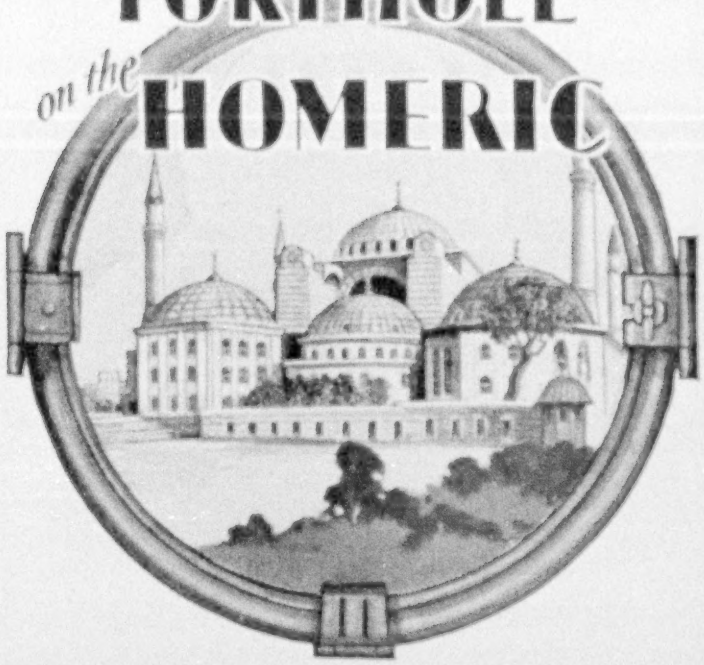
An attractive descriptive booklet, "Your Home Away From Home," will be sent you on request to 452 High Street, Oshkosh, Wisconsin.

THE OSHKOSH TRUNK COMPANY
Oshkosh, Wis., and 8 East 34th St., New York City

OSHKOSH

Trunks

THROUGH A PORTHOLE on the HOMERIC



Constantinople..Turkish since Mohamed II left the imprint of his hand upon a column in Sancta Sophia . . . today, as of old, the Galata Bridge,—the broad highway—spans the Golden Horn from Pera to Stamboul . . . the Great Forum and Hippodrome face the waves at Seraglio Point . . . up the Bosphorus the north bank is adorned by the sumptuous Dolma Baghtcheh reflecting in the waters sailed upon by Jason in the Argo . . . rich in history and legend is the

MEDITERRANEAN CRUISE·SUPREME

on the specially chartered s. s. HOMERIC —"The Ship of Splendor." Sailing from New York—January 26th, next. A peerless itinerary . . . one of the world's leading, most modern, most luxurious steamers . . . the largest ship sailing to the Mediterranean.

Let us send you full particulars

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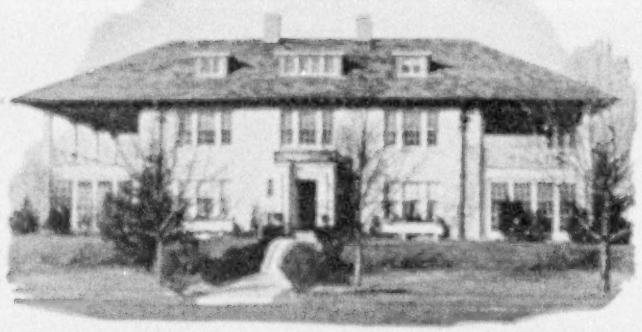
Let this be your reassurance:

WILLIAMS OIL-O-MATIC IS HEATING MORE HOMES THAN ANY OTHER OIL BURNER!



WHEN any household comfort can win its way, like Williams Oil-O-Matic, into more than 70,000 homes, *it must be right!*

Now Williams engineers have made this famous burner even better!

The new Model J Williams Oil-O-Matic is simpler—more efficient! Oil heat perfect to a point undreamed of a few years ago! It is entirely automatic—set the upstairs thermostat at the temperature you wish, and it will be maintained within 2 degrees, all winter. If you wish it cooler or warmer, only a finger's touch is required!

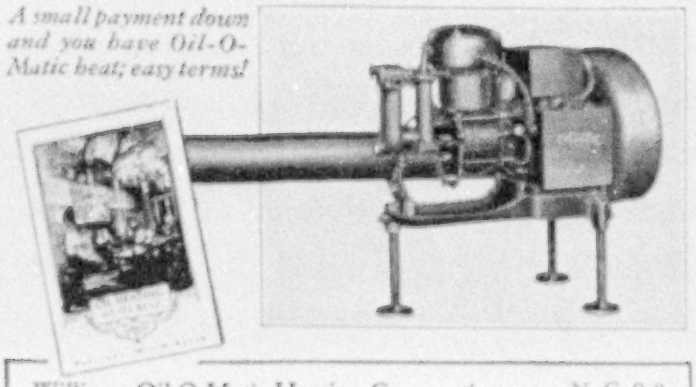
Clean, Healthful Heat

Think of the unmatched convenience! No coal to shovel—no ashes—no dust and dirt and smoke and soot—just clean, healthful, even, *Williams* Oil-O-Matic heat!

Your Williams Oil-O-Matic dealer will be glad to show you Oil-O-Matic in actual operation—explain the *convenient, liberal terms* which place it in reach of modest budgets. Send the coupon for interesting book, "Oil Heating at Its Best"—full facts about oil heat which you ought to know.

WILLIAMS OIL-O-MATIC HEATING

A small payment down and you have Oil-O-Matic heat; easy terms!



Williams Oil-O-Matic Heating Corporation N. G. 9-8
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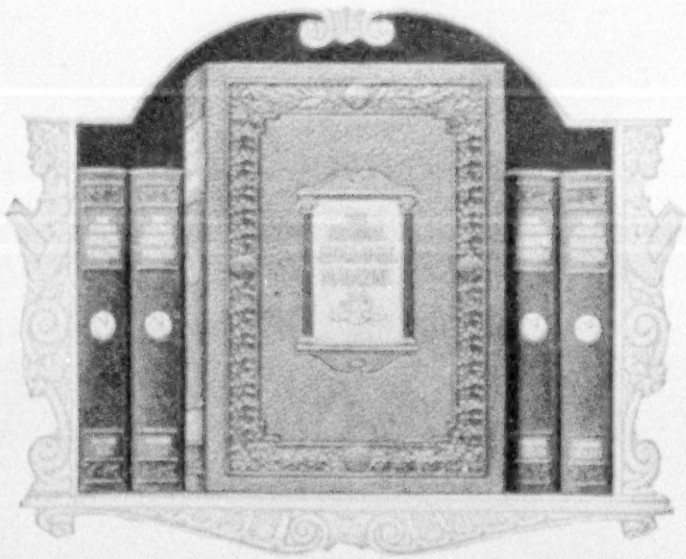
Please send me your free booklet, "Oil Heating at Its Best."

Name.....

Street and Number.....

City.....*State*.....



Molloy Geographic Binders

—Beautiful to look at, deeply embossed in brown and gold; stiff and washable for years of service; so simple that you can bind your Geographics permanently in a few minutes—six issues in each binder.

Examine them for ten days without cost.

All years 1910 to 1928 now ready. If you keep them, send $3.65 a pair or $2.00 for a single binder. Write today.

Foreign orders should include payment. All binders shipped with money-back guarantee.

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NEW HAMPSHIRE

is Glorious in the Autumn!

Come

for a wonderful Autumn Outing in this land of Beauty, Industry, and Agriculture: with mountains, lakes, and ocean shores all gowned in the colors of the Harvest Season.

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Please send rotogravure booklet of 177 views.
Also ☐ Hotels ☐ Tours ☐ Fishing
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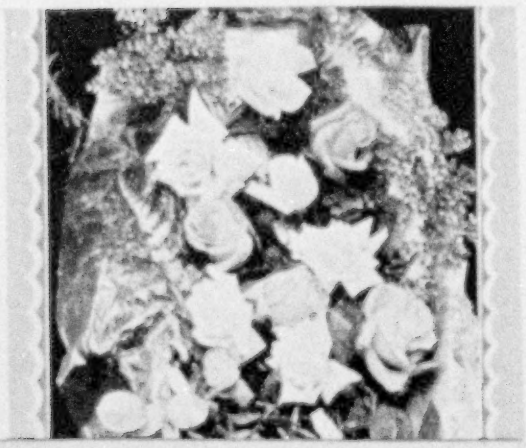
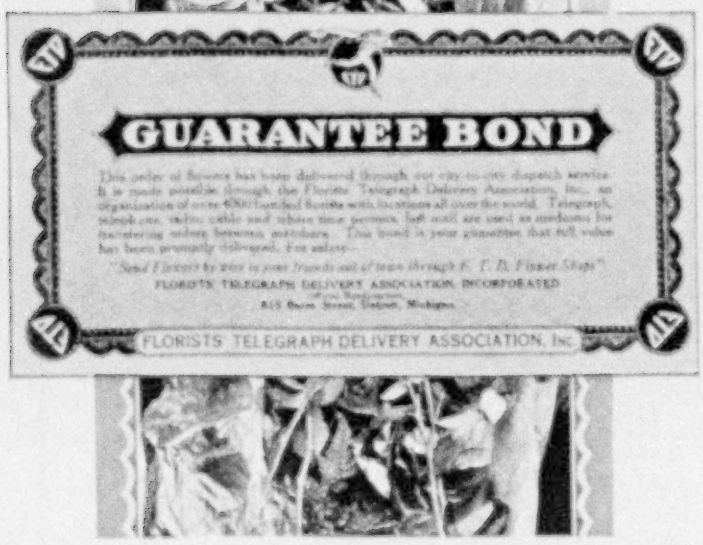
Just write for the booklets you'd like. We'll be glad to send them.

This FTD Bond GUARANTEES Safety in Telegraphing Flowers





"But how will I *know* what kind of flowers are delivered on my telegraph order?"

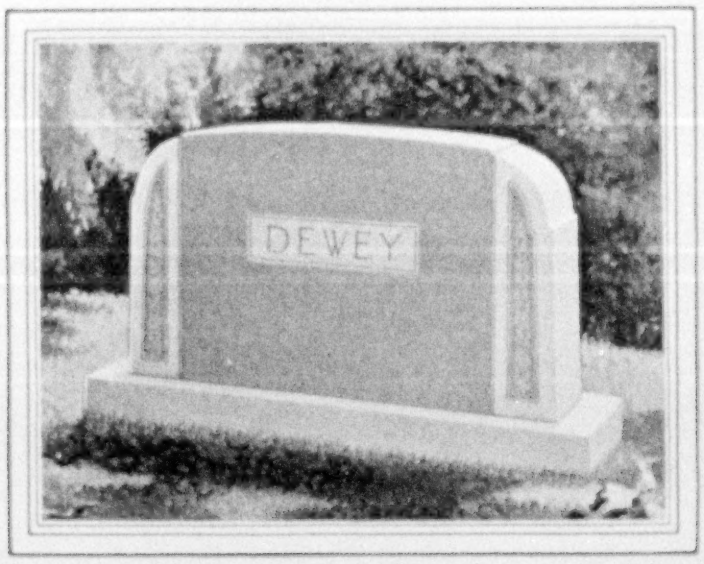
Four thousand responsible, progressive florists in the United States and Canada have vowed that you *shall* know. To this end they have organized the Florists Telegraph Delivery Association.

Seek a florist shop displaying the Winged Mercury—symbol of safety. This florist will send your order to the distant city. Each F. T. D. florist is under bond to *immediately* transmit every order he accepts . . . and to fill *exactly as specified*, any order sent him.

When the flowers you order are delivered, a Bond of Satisfaction is in the box. Only an F. T. D. florist can give you this assurance.

Say it with Flowers

BY WIRE WITH SAFETY



Fitness ~ There are certain qualities essential to a memorial if it is to be fitted to its high purpose. It must be beautiful not only in design but in material. And this beauty must be permanent—for you wish it to carry your message through the years. Dignity it must have, also, and simplicity.

In Rock of Ages Granite you will find a material ideally fitted by Nature to memorial use. It is beautiful in color, whether polished or axed. And this beauty is as enduring as the Barre hills from which it comes—impervious to heat, cold, or moisture. So firm and even is its texture that it may be carved in designs of infinite delicacy, yet so lovely is its color that the simplest Rock of Ages Memorial is a thing of beauty.

Our Certificate of Perfection, when requested from any memorial dealer, assures you of our personal inspection through the various stages of completion and is your perpetual guarantee against defective workmanship and material.

[Write for booklet "G"—"How to Choose a Memorial"]

ROCK OF AGES

THE *DISTINCTIVE* BARRE GRANITE

ROCK OF AGES CORPORATION — BARRE VERMONT

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Visit every country on the MEDITERRANEAN

TRAVEL in modern comfort to scenes of ancient splendor with James Boring's Fourth Annual Mediterranean Cruise. The S.S. "Calgaric" of the White Star Line, built especially for cruising, will be your home while the most famous landmarks of history present themselves in glorious panorama.

Sixty-eight delightful days await you. Restful loafing on shipboard, or pleasant entertainment, as you prefer. You will visit every country on the Mediterranean, and stop at 23 ports and four principal islands. Do it thoroughly while there.

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The S.S. "Calgaric" sails from New York February 14th, 1929. Rates, first class only, $740 to $1675, cover every necessary expense, including stop-over steamship tickets. Membership limited to 480. It is advisable to make your plans early.

Inquire of your local steamship agent, or

JAMES BORING'S TRAVEL SERVICE, INC.
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A PROBLEM *for* HOME MAKERS

Is the management of the Family Income.

OUR HOME BUDGET SHEET is designed to cover one month's record of income and outgo.

It is an Account Sheet for both the Beginner and the Budget-wise.

Sent FREE on request.

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John Hancock
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197 Clarendon Street, Boston, Mass.

Please send me FREE copy of the John Hancock Home Budget Sheet. (I enclose 2c. to cover postage.)

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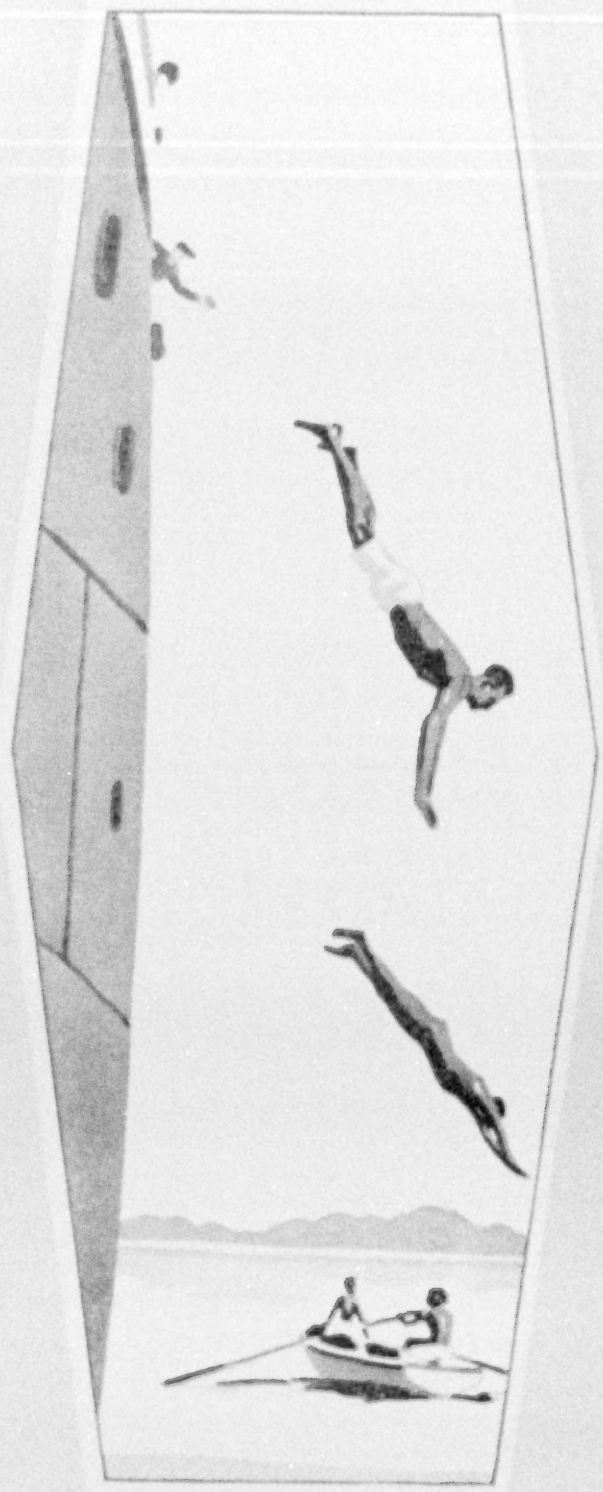

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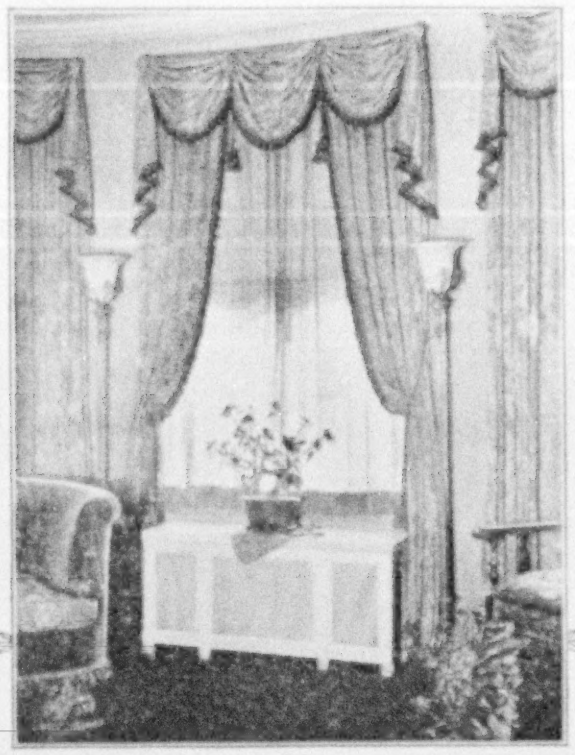

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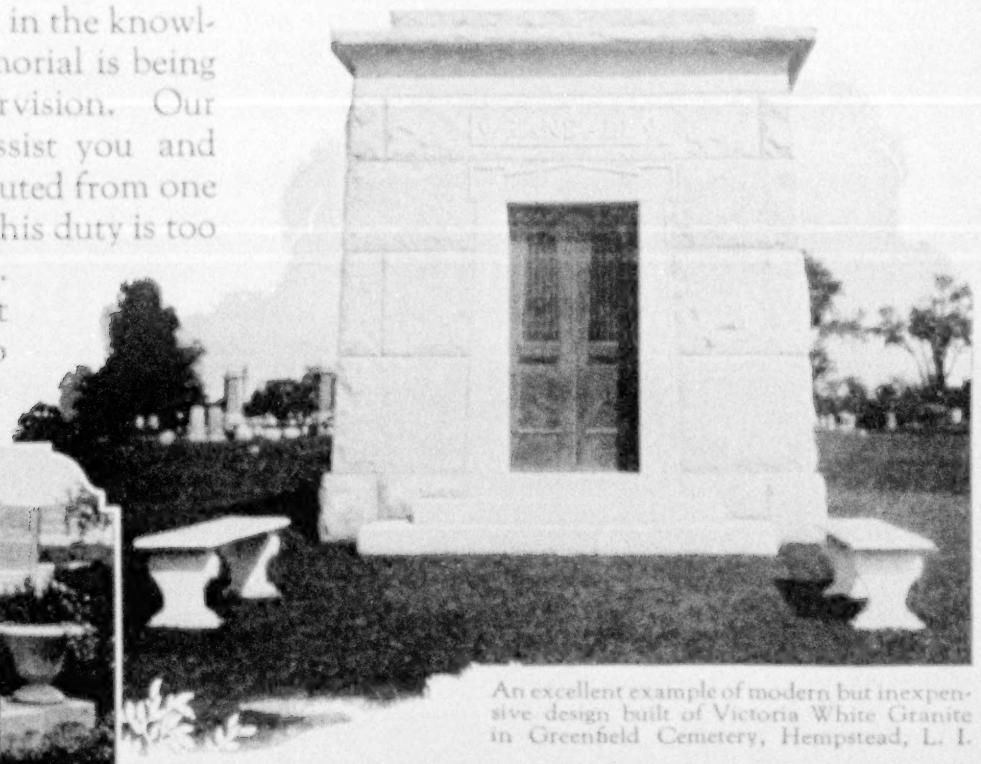
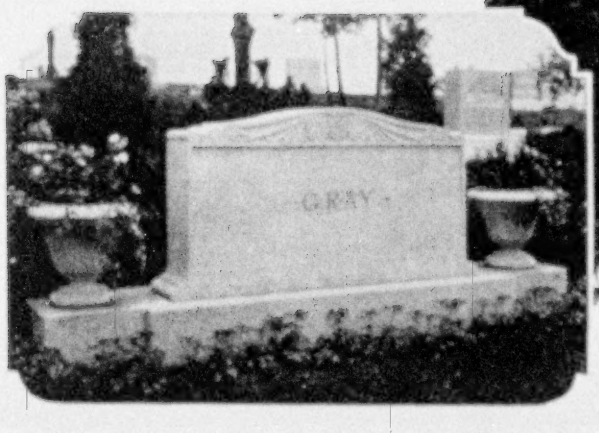


An excellent example of modern but inexpensive design built of Victoria White Granite in Greenfield Cemetery, Hempstead, L. I.



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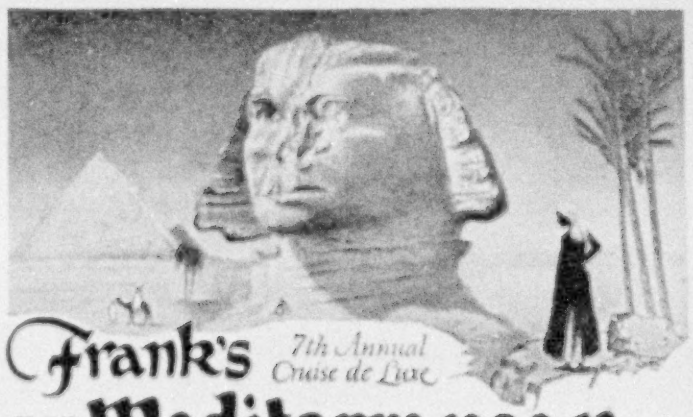

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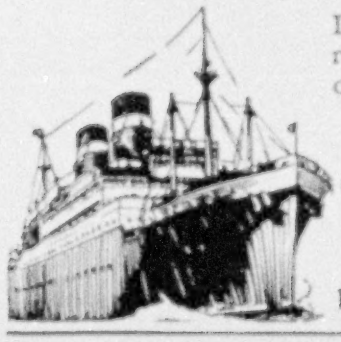

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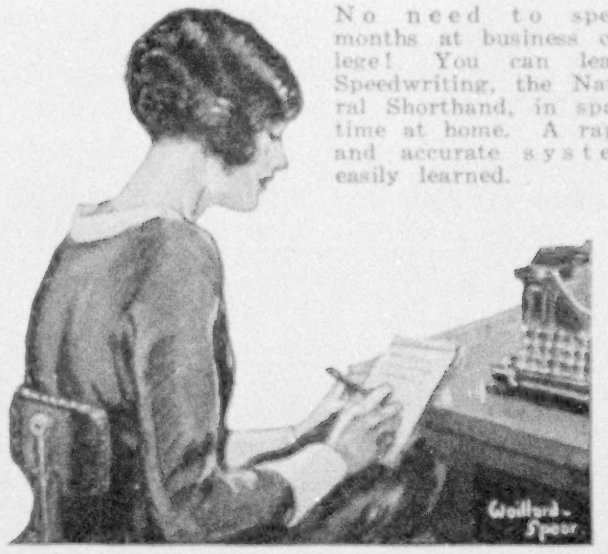

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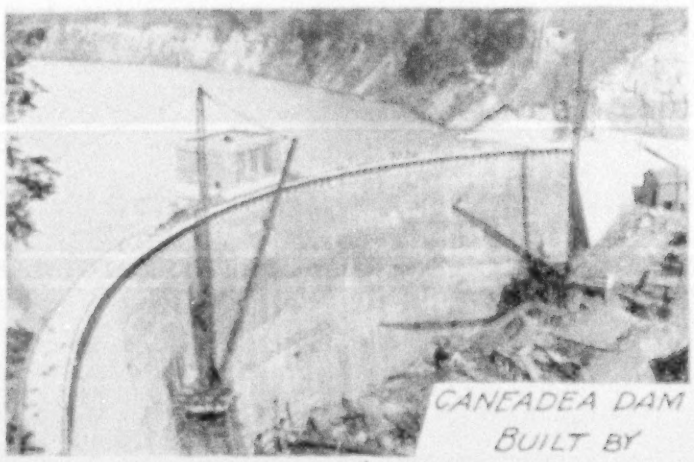

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My shin still hurts

I DID an impromptu hurdle over the lawn-mower one night. Of course, it was dark, but that's no alibi. I didn't own a flashlight then. Need I say that now I *do* own one? Eveready, by name, and it's always that—ever-ready. I keep it that way with Eveready Batteries—greatest little light-producers you ever saw. From the amount of use they stand, you'd think they were twice their size. Pardon my enthusiasm, but I've got the flashlight habit.

My advice to you is to follow suit and save your shins. The good word is "Eveready" whether it's flashlight or battery. Where light is concerned you can't make a mistake on *those* batteries—made in the same good way as the famous Eveready Radio Batteries.

Send 10c for sample pens and booklet. Esterbrook Pen Co., Dept. N3 Camden, N. J.

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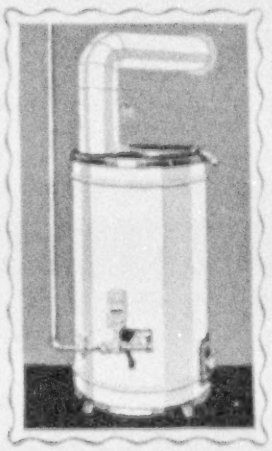
Think of it! a garbage can in a home that boasts modern bathrooms, or automatic heat, or mechanical refrigeration. What an offense, what a dangerous nuisance, when you can have—*for as little as $100 f. o. b. factory*—clean, odorless, gas-fired incineration. Placed in any home, old or new, INCINOR banishes forever the drudgery, fire hazard, and health menace of garbage, rubbish, and trash. The man who installs INCINOR becomes a better neighbor, a better citizen, and sets an example for his community. Surely, *you* want the facts. Send the coupon. Home Incinerator Co., Milwaukee, Wisconsin.



INCINOR reduces wet garbage, trash, and rubbish to a few handfuls of clean, odorless, sterilized ash. Can be installed in any house, old or new, in a few minutes. No bother—simply press the lighter button and gas flame does the rest. Exclusive patented features insure complete incineration. Will not attract vermin; nothing "built-in." INCINOR is made in sizes for all homes and institutions. For as little as $100 f. o. b. factory.

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Send me your free booklet "The Decent Way."

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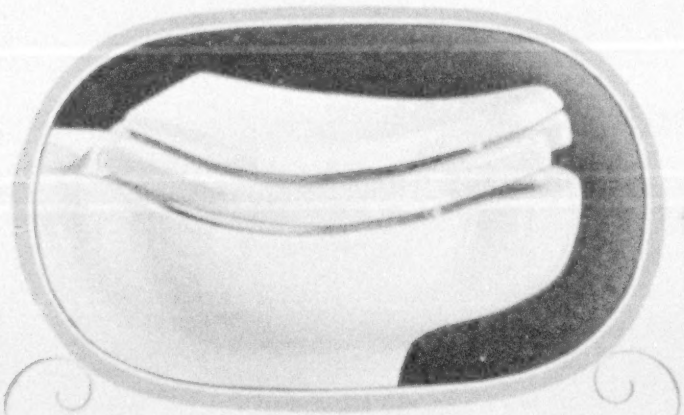

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Provided with scientific Saddle Seat

THE "modern" plumbing of only a decade ago is decidedly out of date today. Higher standards of health, of comfort, of sanitation, have demanded better and better fixtures.

The very shape of the quiet Si-wel-clo indicates how much consideration has been given to the subject. Notice how the dip in the rim elevates the front and rear of the bowl opening, minimizing the possibility of soiling. The comfort of this saddle seat encourages the natural seating position of the body, aiding organs and muscles to function thoroughly and naturally.

Even before this scientific saddle seat became known the Si-wel-clo achieved distinction because of its extremely quiet operation. By doing away with noisy, gurgling and dripping sounds—quite embarrassing when guests are present—the Si-wel-clo has won a host of friends.

Like all other Te-pe-co ware, Si-wel-clo is graceful and elegant. It typifies the highest grade of workmanship. You can rest assured when the Te-pe-co Trade-Mark appears on a closet, tub, washstand, etc., the fixture will wear long and well.

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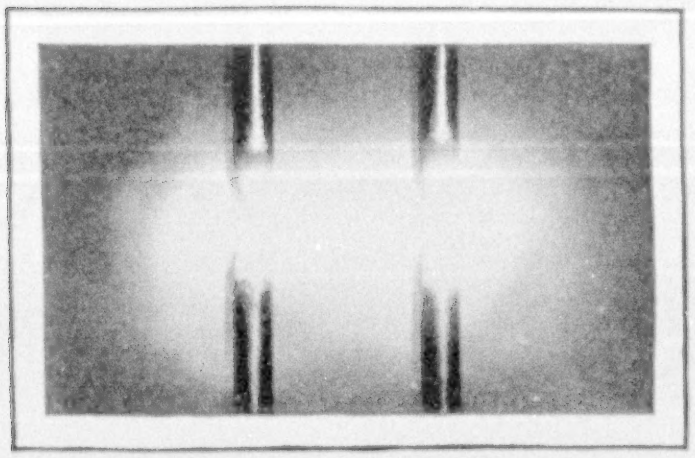

The Truth About Artificial Sunlight

What you may expect from the carbon arc reproduction of the sun's rays

NATURAL sunlight contains many kinds of rays and all are essential to mankind.

It contains the ultra-violet rays which are invisible. It contains also the visible rays and the infra-red rays which cannot be seen but are felt as heat.

Light that is unnatural in its composition, particularly if it contains abnormal amounts of ultra-violet, may prove dangerous, and should never be used except under a doctor's supervision. A number of diseases are cured rapidly by light treatments, but not all; light is not a cure-all. In certain conditions it may be harmful. If you are sick, do not court the dangers of self-diagnosis but see your doctor.

But the vast majority of us are healthy and may use sunshine freely, both real and artificial. You can preserve your health, and add to your vigor, by bathing your body in artificial sunshine.

Real artificial sunshine as produced in a carbon arc lamp has all the essential rays of sunlight each in its proper proportion. Reporting on its tests of the light from such a lamp, the U. S. Bureau of Standards stated: "Of all the artificial illuminants tested it is the nearest approach to sunlight."

This light will do for you just what natural sunlight will do. It is a health builder. Moderate exposure will gradually give you a healthy coat of tan. Great benefit can be derived by shorter exposures which avoid tanning. If exposed too long, you will sunburn just as in summer sunshine and may suffer serious systemic disturbances.

Eveready Sunshine Carbons bring sunshine indoors. Every arc lamp in which they are burned is a miniature sun to be turned on or off at the touch of a switch.

Carbon arc lamps and Eveready Sunshine Carbons are sold by medical supply houses and some electric light companies. If you have difficulty in finding them, write to us and we will send you a list of reputable manufacturers from whom they may be obtained. Write for this list today to National Carbon Company, Inc., Cleveland, Ohio. Unit of Union Carbide and Carbon Corporation.

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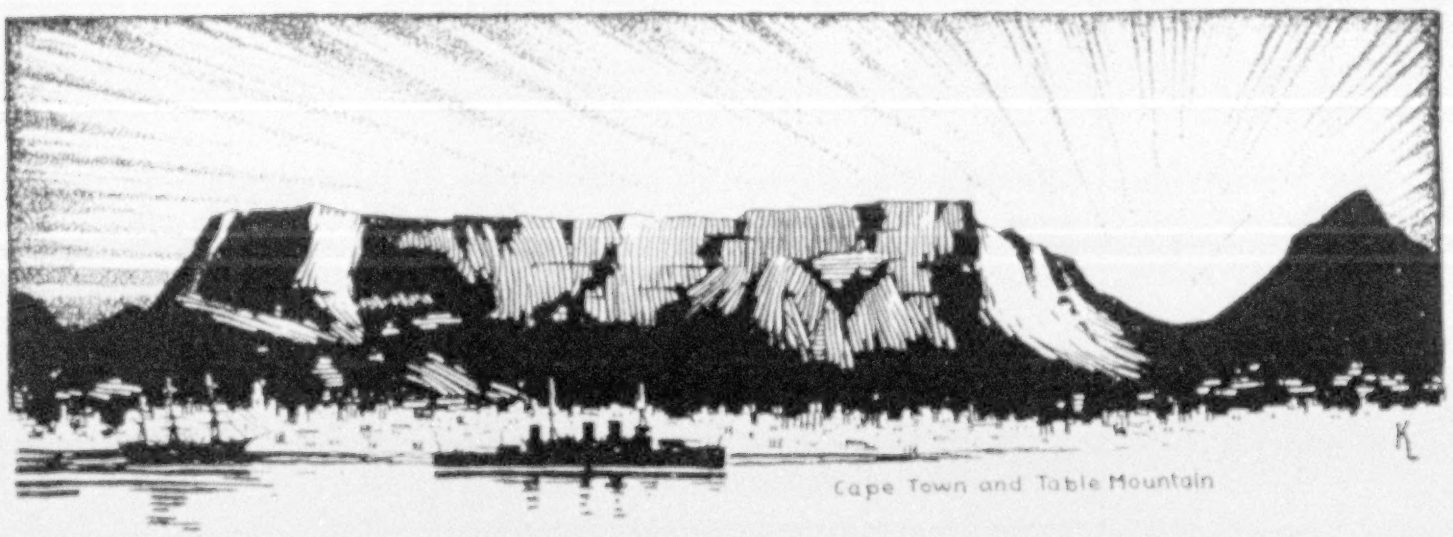

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¶ The only cruise to encircle the Dark Continent and pay visits to all its characteristic sections—the black West Coast—energetic South Africa—the historic East Coast—Central Africa and Egypt. The only cruise to include for all its members a trip through the Big Game Reserves of Kenya Colony and the Reservations of Native Tribes to Nairobi.

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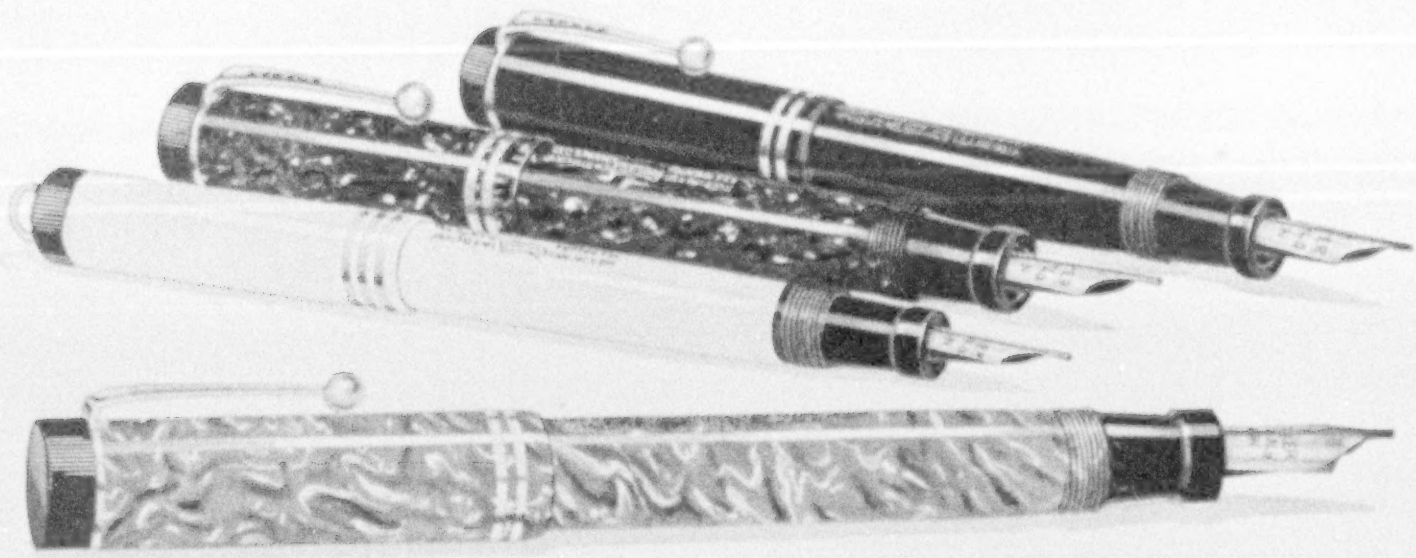

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